ब्रह्मांड का रहस्य

पढ़ें और सीखें योजना

ब्रह्मांड का रहस्य

के.पी. सिन्हा
इ.ए. लॉर्ड

विभागीय सहयोग
राम दुलार शुक्ल

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

जून 1992
ज्येष्ठ 1914

PD 10T-SD

प्रकाशन सहयोग

सी. एन. राव : अध्यक्ष, प्रकाशन विभाग

प्रभाकर द्विवेदी : मुख्य संपादक
शर्मा दत्त : सहायक संपादक

यू. प्रभाकर राव : मुख्य उत्पादन अधिकारी
डी. साई प्रसाद : उत्पादन अधिकारी
राजेन्द्र चौहान : उत्पादन सहायक

आवरण : चन्द्र प्रकाश टंडन

मूल्य : रु. 13.50

प्रकाशन विभाग में सचिव, राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्, श्री अरविंद मार्ग, नई दिल्ली 110016 द्वारा प्रकाशित, फोटो टाईपसैट, प्रिंट एंड फोटो टाईप सैटर्स, नारायणा फेज़ II, नई दिल्ली 110028 तथा सरस्वती प्रिंटर्स, ए-16, सैक्टर-8, नौएडा, गाजियाबाद (यू.पी.) द्वारा मुद्रित

प्राक्कथन

विद्यालय शिक्षा के सभी स्तरों के लिए अच्छे शिक्षाक्रम, पाठ्यक्रमों और पाठ्यपुस्तकों के निर्माण की दिशा में हमारी परिषद् पिछले पच्चीस वर्षों से भी अधिक समय से कार्य कर रही है। हमारे कार्य का प्रभाव भारत के सभी राज्यों और संघशासित प्रदेशों में प्रत्यक्ष और अप्रत्यक्ष रूप से पड़ा है और इस पर परिषद् के कार्यकर्ता संतोष का अनुभव कर सकते हैं।

हमने देखा है कि अच्छे पाठ्यक्रम और अच्छी पाठ्यपुस्तकों के बावजूद हमारे विद्यार्थियों की रुचि स्वतः पढ़ने की ओर अधिक नहीं बढ़ती। इसका एक मुख्य कारण अवश्य ही हमारी दूषित परीक्षा-प्रणाली है जिसमें पाठ्यपुस्तकों में दिए गए ज्ञान की ही परीक्षा ली जाती है। इस कारण बहुत ही कम विद्यालयों में कोर्स के बाहर की पुस्तकों को पढ़ने के लिए प्रोत्साहन दिया जाता है। अतिरिक्त पठन में बच्चों की रुचि न होने का एक बड़ा कारण यह भी है कि विभिन्न आयुवर्ग के बच्चों के लिए कम मूल्य की अच्छी पुस्तकें पर्याप्त मात्रा में उपलब्ध भी नहीं हैं। यद्यपि पिछले कुछ वर्षों में इस कमी को पूरा करने के लिए कुछ काम प्रारंभ हुआ है पर वह बहुत ही नाकाफ़ी है।

इस दृष्टि से परिषद् ने बच्चों की पुस्तकों के लेखन की दिशा में एक महत्वाकांक्षी योजना प्रारंभ की है। इसके अंतर्गत ''पढ़ें और सीखें'' शीर्षक से एक पुस्तकमाला तैयार करने का विचार है जिसमें विभिन्न आयुवर्ग के

बच्चों के लिए सरल भाषा और रोचक शैली में अनेक विषयों पर बड़ी संख्या में पुस्तकें तैयार की जाएँगी। हम आशा करते हैं कि बहुत शीघ्र ही हिन्दी में हम निम्नलिखित विषयों पर 50 से भी अधिक पुस्तकें प्रकाशित कर सकेंगे।

(क) शिशुओं के लिए पुस्तकें
(ख) कथा-साहित्य
(ग) जीवनियां
(घ) देश-विदेश परिचय
(ङ) सांस्कृतिक विषय
(च) वैज्ञानिक विषय
(छ) सामाजिक विज्ञान के विषय

इन पुस्तकों के निर्माण में हम प्रसिद्ध लेखकों, वैज्ञानिकों, अनुभवी अध्यापकों और योग्य कलाकारों का सहयोग ले रहे हैं। प्रत्येक पुस्तक के प्रारूप पर भाषा, शैली और विषय-विवेचन की दृष्टि से सामूहिक विचार करके उसे अंतिम रूप दिया जाता है।

परिषद् इस माला की पुस्तकों को लागत-मूल्य पर ही प्रकाशित कर रही है ताकि ये देश के हर कोने में पहुँच सकें। भविष्य में इन पुस्तकों को अन्य भारतीय भाषाओं में अनुवाद कराने की भी योजना है।

हम आशा करते हैं कि शिक्षाक्रम, पाठ्यक्रम और पाठ्यपुस्तकों के क्षेत्र में किए गए कार्य की भाँति ही परिषद् की इस योजना का भी व्यापक स्वागत होगा।

प्रस्तुत पुस्तक **ब्रह्मांड का रहस्य** के लेखन के लिए श्री **के.पी. सिन्हा** एवं **इ.ए. लॉर्ड** ने हमारा निमंत्रण स्वीकार किया जिसके लिए हम उनके अत्यंत आभारी हैं। जिन-जिन विद्वानों, अध्यापकों और कलाकारों से इस पुस्तक को अंतिम रूप देने में हमे सहयोग मिला है उनके प्रति मैं कृतज्ञता ज्ञापित करता हूँ।

हिन्दी में "पढ़ें और सीखें" पुस्तक माला की यह योजना प्रो. अर्जुन देव के मार्ग-दर्शन में चल रही है। उनके सहयोगियों में श्रीमती संयुक्ता लूदरा, डा. रामजन्म शर्मा, डा. सुरेश पांडेय, डा. हीरालाल बाछोतिया और डा. अनिरुद्ध राय सक्रिय सहयोग दे रहे हैं।

इस योजना में विज्ञान की पुस्तकों के लेखन का मार्ग-दर्शन दिल्ली विश्वविद्यालय के भूतपूर्व कुलपति और राजस्थान विश्वविद्यालय में वर्तमान प्रोफेसर – एमेरिटस डा. रामचरण मेहरोत्रा कर रहे हैं। विज्ञान की पुस्तकों के लेखन के संयोजन और अंतिम संपादन आदि का दायित्व हमारे विज्ञान एवं गणित शिक्षा विभाग के प्रो. राम दुलार शुक्ल वहन कर रहे हैं।

मैं डा. रामचरण मेहरोत्रा को और अपने सभी सहयोगियों को हार्दिक धन्यवाद और बधाई देता हूँ।

इन पुस्तकों को इतने अच्छे ढंग से प्रकाशित करने के लिए मैं परिषद् के प्रकाशन विभाग के कार्यकर्ताओं, विशेषकर विभागाध्यक्ष श्री सी.एन. राव और मुख्य संपादक श्री प्रभाकर द्विवेदी को हार्दिक धन्यवाद देता हूँ।

इस माला की पुस्तकों पर बच्चों, अध्यापकों और बच्चों के माता-पिता की प्रतिक्रिया का हम स्वागत करेंगे ताकि इन पुस्तकों को और भी उपयोगी बनाने में हमें सहयोग मिल सके।

के. गोपालन
निदेशक
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

दो शब्द

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् (एन.सी.ई.आर.टी) की "पढ़ें और सीखें" योजना के अंतर्गत यह एक छोटा-सा प्रयास है। जब परिषद् के प्रगतिशील निदेशक डा. के. गोपालन ने मुझे इस दिशा में विज्ञान के विषयों का कार्यभार संभालने के लिए आमंत्रित किया तो अपने वैज्ञानिक मित्रों की अतिव्यस्तता के कारण यह उत्तरदायित्व स्वीकार करने में मुझे संकोच था।

इस दिशा में मेरा प्रयास रहा है कि विज्ञान के विभिन्न विषयों के जाने-माने विद्वानों को इस सराहनीय कार्य के लिए निमंत्रित कर सकूं। ऐसा मेरा विश्वास है कि खोज और अनुसंधान की आनंदपूर्ण अनुभूतियों वाले वैज्ञानिक ही अपने आनंद की एक झलक बच्चों तक पहुंचा सकते हैं। मैं उनका हृदय से आभारी हूं कि उन्होंने अंकुरित होने वाली पीढ़ी के लिए अपने बहुमूल्य समय में से कुछ क्षण निकालने का प्रयास किया। बालक राष्ट्र की सब से बहुमूल्य और महत्वपूर्ण निधि है और मेरे लिए यह किंचित आश्चर्य और संतोष की बात है कि हमारे इतने लब्धप्रतिष्ठ और अत्यंत व्यस्त वैज्ञानिक बच्चों के लिए थोड़ा परिश्रम करने के लिए सहर्ष मान गए हैं। मैं सभी वैज्ञानिक मित्रों के लिए हृदय से आभारी हूं।

इन पुस्तकों की तैयारी में हमारा मुख्य ध्येय रहा है कि विषय ऐसी शैली में प्रस्तुत किया जाए कि बच्चे स्वयं इसकी ओर आकर्षित हों, साथ ही

भाषा इतनी सरल हो कि बच्चों को इनके अध्ययन से विज्ञान के गूढ़तम रहस्यों को समझने में कोई कठिनाई न हो। इन पुस्तकों के पढ़ने से उनमें अधिक पढ़ने की रुचि पैदा हो, उनके नैसर्गिक कौतूहल में वृद्धि हो जिससे ऐसे कौतूहल और उसके समाधान के लिए स्वप्रयत्न उनके जीवन का एक अंग बन जाए।

यह योजना एन.सी.ई.आर.टी. के वर्तमान निदेशक डा. के. गोपालन की प्रेरणा से चल रही है। मैं उन्हें इसके लिए बधाई और धन्यवाद देता हूँ।

प्रो. के.पी. सिन्हा और **डा. इ.ए. लॉर्ड** ने इस पुस्तक के लिखने के लिए मेरा अनुरोध स्वीकार किया जिसके लिए मैं हृदय से आभारी हूँ। परिषद् के विज्ञान एवं गणित शिक्षा विभाग के प्रो. रामदुलार शुक्ल विज्ञान की पुस्तकों के लेखन से संबंधित योजना के संयोजक हैं और बहुत परिश्रम और कुशलता से अपना कार्य कर रहे हैं। प्रो. अर्जुन देव "पढ़ें और सीखें" संपूर्ण योजना के संचालक हैं। मैं इन दोनों को हृदय से धन्यवाद देता हूँ।

आशा है कि ऐसी पुस्तकों से हमारी नई पीढ़ी की बाल्यकाल ही में वैज्ञानिक मानसिकता का शुभारंभ हो सकेगा और विज्ञान के नवीनतम ज्ञान के साथ ही साथ उन्हें अपने देश की प्रगतियों एवं वैज्ञानिकों के कार्य की झलक मिल सकेगी जिससे उनमें अपने राष्ट्र के प्रति गौरव की भावना का भी सृजन होगा।

रामचरण मेहरोत्रा

अध्यक्ष

'पढ़ें और सीखें योजना'

(विज्ञान)

लेखक परिचय

प्रो. के.पी. सिन्हा

सुपरिचित वैज्ञानिक प्रो. के.पी. सिन्हा बहुत सी अन्तर्राष्ट्रीय वैज्ञानिक संस्थाओं के सदस्य हैं। भौतिक विज्ञान के क्षेत्र में 1974 में आपको शांतिस्वरूप भटनागर पुरस्कार, 1975 में भौतिकी के क्षेत्र में मेरु (स्विटजरलैंड) पुरस्कार, 1984 में भारतीय विज्ञान संस्थान के डिस्टिंग्विस्ड एलुमुनी पुरस्कार तथा अन्य अनेक पुरस्कारों से सम्मानित किया गया है। प्रो. सिन्हा विश्वविद्यालय अनुदान आयोग के राष्ट्रीय प्रवक्ता रहे हैं। आप 1970 से 1989 तक भारतीय विज्ञान संस्थान के भौतिकी एवं गणित-विज्ञान तथा सैद्धांतिक अध्ययन विभाग में वरिष्ठ प्राध्यापक एवं अध्यक्ष रहे हैं। प्रो. सिन्हा 1986 से 1988 तक एम.एस.आई.एल. प्रोफेसर तथा 1990 से 1991 तक वरिष्ठ वैज्ञानिक पद पर कार्यरत रहे। सम्प्रति प्रो. सिन्हा नेहू (NEHU) में कम्प्लेक्स सिस्टम पर आधारित मूल अनुसंधान संस्थान, शिलांग में निदेशक हैं। प्रो. सिन्हा का मुख्य अनुसंधान कार्य-ठोस, अन्योन्य क्रिया, प्रावस्था संक्रमण (चुम्बकत्व एवं अति चालकता) ब्रह्मांडीय माडल, विचित्रता युक्त बिगबैंग ब्रह्मांडिकी तथा मूल विज्ञान के अन्य पहलू रहे हैं। आपकी अब तक 200 से अधिक शोध पत्र तथा 5 पुस्तकें प्रकाशित हो चुकी हैं।

डा. ई.ए. लार्ड

वैज्ञानिक डा. लार्ड ने प्रो. सिन्हा के साथ रिलेटिविटी (आपेक्षिकता), प्वांकारे गास सिद्धान्त (विशेषकर गुरुत्वाकर्षण एवं ब्रह्मांडिकी में) तथा प्रवल गुरुत्व के क्षेत्र में कार्य किया है। डा. लार्ड ने प्रो. सिन्हा के अनुसंधान दल में रहकर इंग्लैंड तथा जर्मनी (1972-1975) में तथा भारत में (1982-89) शोध कार्य किया है। आप लगभग 40 शोध पत्रों के प्रणेता हैं।

गांधी जी का जन्तर

तुम्हें एक जन्तर देता हूं। जब भी तुम्हें सन्देह हो या तुम्हारा अहम् तुम पर हावी होने लगे, तो यह कसौटी आजमाओ :

जो सबसे गरीब और कमजोर आदमी तुमने देखा हो, उसकी शकल याद करो और अपने दिल से पूछो कि जो कदम उठाने का तुम विचार कर रहे हो, वह उस आदमी के लिए कितना उपयोगी होगा। क्या उससे उसे कुछ लाभ पहुंचेगा ? क्या उससे वह अपने ही जीवन और भाग्य पर कुछ काबू रख सकेगा ? यानि क्या उससे उन करोड़ों लोगों को स्वराज्य मिल सकेगा जिनके पेट भूखे हैं और आत्मा अतृप्त है ?

तब तुम देखोगे कि तुम्हारा सन्देह मिट रहा है और अहम् समाप्त होता जा रहा है।

विषय क्रम

भाग – एक

सूर्य मंडल

परिचय

रात में सितारों भरे आकाश को देखने से एक विचित्र-सा अनुभव होता है। लेकिन ऐसा अनुभव रात में बिजली की रोशनी से चमकते हुए महानगरों में पूर्णरूप से नहीं मिलता है। नगर से दूर, शान्त और स्वच्छ वातावरण में जो अनुभव होता है उसका वर्णन करना कठिन है। प्राचीन काल के मनुष्यों पर भय और आश्चर्य का प्रभाव इतना पड़ा कि उनके मन में धार्मिक भावनायें उत्पन्न हुईं। उन्होंने सोचा कि इस विशाल ब्रह्मांड को रचने वाला कोई बड़ा ही विराट, शक्तिमान तथा ज्ञानी रहा होगा। इस विचार और सृष्टि के रहस्य को देखकर मनुष्य ने ईश्वर जैसी सत्ता की स्थापना की। आकाश देवताओं का स्थान हो, यह जाना गया और उनके अनुसार ये देवता प्रकृति के भिन्न-भिन्न पहलुओं को देखने और नियंत्रण करने वाले माने गये। अग्नि, वायु, महासागर, आकाश, पर्वत, चन्द्रमा, सूर्य इत्यादि को देव रूप दिया गया। इन देवताओं को प्रसन्न रखने के लिए हमारे पूर्वजों ने भिन्न-भिन्न पूजाओं की रचना की और उनकी प्रथा चलायी। सूर्य, चन्द्रमा और आकाश के देवताओं पर आधारित बहुत-सी कहानियाँ प्रचलित हैं। आस्ट्रेलिया के आदिवासियों की कथाओं में ईश्वर ब्रह्मांड का रचने वाला है और आकाश गंगा के उस पार रहता है। सूर्य और चन्द्रमा उनकी संतानें हैं और ये मानव

को उनका संदेश देती हैं। अफ्रीका के आदिवासी सूर्य को ईश्वर का नेत्र समझते हैं। इण्डोनेशिया और पेरु में सूर्य को एक विशाल पक्षी समझा जाता है। सूर्य सात घोड़ों के रथ पर चलता है यह विश्वास कई देशों में प्रचलित है। इसका वर्णन प्राचीन ग्रंथों में भी मिलता है।

यह स्थिति उस समय की है जब मानव एक शिकारी था और भोजन के लिये शिकार पर निर्भर था। लेकिन जब मानव ने खेती करनी आरंभ की तो उसने सूर्य और चन्द्रमा की गति को सावधानी से देखना शुरू किया। यह फसल के बोने और काटने के समय को निर्धारित करने के लिए ही नहीं अपितु ऋतु और उनसे जुड़े हुए त्यौहारों को जानने के लिए भी आवश्यक था। समुद्र में दिशा संकेत के लिए आकाश में भ्रमण करने वाले सितारों का ठीक स्थान जानना भी आवश्यक था। इन्हीं आवश्यकताओं ने खगोल शास्त्र को जन्म दिया।

सूर्य, चन्द्रमा और तारों की गतिविधि की सबसे पुरानी रचना भारतीय चाल्डीन्स (Chaldeans) और बेबीलोन (इराक) सभ्यता में पायी जाती है। यह लगभग पांच हजार वर्ष पुरानी है। उस समय यह विश्वास था कि पृथ्वी पर होने वाली घटनायें ग्रहों द्वारा संचालित हैं। लेकिन आधुनिक विज्ञान के अनुसार इसमें कोई सच्चाई नहीं है। यहाँ हम देखेंगे कि ग्रहों और तारों की गतिविधियों का परीक्षण करने से मानव ने कैसे धीरे-धीरे एक शास्त्र का विस्तार किया जिसमें आधुनिक ब्रह्मांड (universe) का ज्ञान भरा है।

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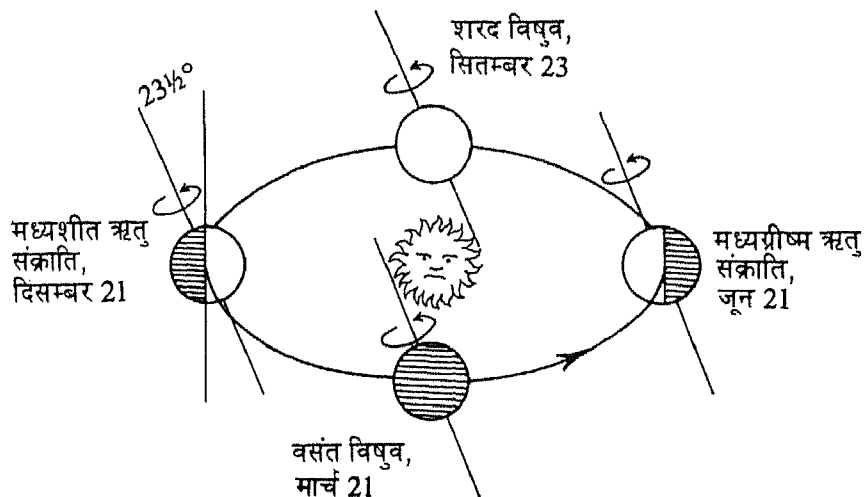
पृथ्वी और सूर्य की गति

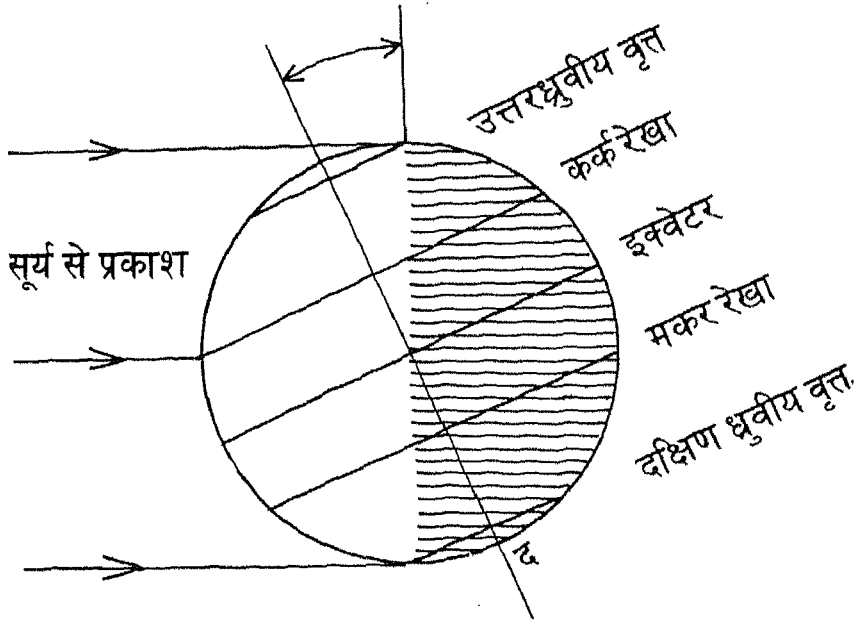
पृथ्वी सूर्य के चारों ओर एक गोल रास्ते पर चलती है (चित्र 1) इस तल को प्लेन ऑफ इक्लीप्स (Plane of eclipse) कहते हैं। पृथ्वी के एक बार पूरा घूमने के समय को एक साल कहते हैं। समय का यह एक बुनियादी माप है। पृथ्वी एक लट्टू की तरह अपने अक्ष (axis) (जो उत्तरी और दक्षिणी ध्रुव से गुज़रता है) पर घूमती है। इसी कारण पृथ्वी पर खड़ा व्यक्ति सूर्य को उदय होते, आकाश में ऊपर आते और फिर दूसरी ओर अस्त होते देखता है। जिस समय सूर्य आकाश पर सबसे ऊँचे स्थान पर पहुँचता है उसे मध्याह्न (noon) कहते हैं। एक मध्याह्न से दूसरी मध्याह्न तक का समय "एक दिन" होता है। यह भी समय का एक बुनियादी माप है। हम "एक दिन" को 24 घंटों में बांटते हैं। पृथ्वी को अपने अक्ष पर एक बार घूमने में एक दिन से थोड़ा कम समय लगता है। क्योंकि अपने अक्ष पर घूमने के साथ वह अपनी वार्षिक कक्षा (orbit) पर भी थोड़ा आगे बढ़ती है। इसलिए पृथ्वी का अपने

चित्र 1. **पृथ्वी का दैनिक घूर्णन और इसकी सूर्य के चारों ओर वार्षिक यात्रा**

अक्ष पर एक बार घूमने का समय 23 घंटे 56 मिनट होता है। यहाँ एक और समस्या भी है और वह है कि पृथ्वी अपने अक्ष पर जाड़े के दिनों में तेज गति से चलती है और ग्रीष्म ऋतु में उससे धीरे। इसलिए एक दिन का समय, ऋतु के अनुसार भी बदलता रहता है और इसलिए हमें समय का औसत लेना पड़ता है। इस औसत दिन को ''औसत सौर दिवस'' कहते हैं।

प्राचीन खगोलज्ञों को वार्षिक ऋतुओं और त्यौहारों की पूर्वसूचना आम जनता को देनी पड़ती थी। इसके लिए उन्हें एक उचित कैलेन्डर की जरूरत थी जो हर साल के लिए लागू हो। इसमें भी एक कठिनाई उत्पन्न हुई क्योंकि एक साल में दिनों की संख्या पूर्णांक नहीं है अपितु इसमें 365.2422 दिन होते हैं। प्राचीन मिस्र में 365 दिन का साल माना जाता था।

उन्होंने एक साल में 12 महीने रखे और एक महीने में 30 दिन। बाकी बचे 5 दिन त्यौहारों के लिए रखे। चूंकि एक साल में 365.2422 दिन होते हैं इसलिए उनका कैलेन्डर चार साल बाद एक दिन से गलत हो जाता था। इसलिए नाइल नदी की वार्षिक बाढ़ की तारीख जो कि मिस्र की खेती के लिए अत्यन्त आवश्यक थी देर से आने लगी। कैलेन्डर के अनुसार नाइल की बाढ़ का एक और खगोलिक घटना से पता चल सकता था। हर साल वह बाढ़ आकाश में सबसे चमकीले तारे सिरीयस के प्रकट होने पर आती थी। मिस्र देशवासी सिरीयस को बाढ़ का देवता सोथीस मानते थे। वहाँ के पुजारी जो खगोलिक तथा समय माप का काम करते थे, जानते थे कि 1460 (= 4 × 365) दिन के बाद ये सिरीयस की घटना फिर होगी। इसलिए सोथीस साल और कैलेन्डर साल में एकरूपता लाने के लिए उन्होंने तय किया कि सोथीस साल में त्यौहार के 6 दिन होंगे और कैलेन्डर साल में पाँच होंगे। इस तरह लीप वर्ष के विचार की उत्पत्ति हुई, लेकिन यह सुझाव माना नहीं गया। मिस्र के पुजारी नहीं चाहते थे कि उनके सिवा वहाँ की आम जनता इस बात को आसानी से समझ सके।

आधुनिक लीप वर्ष का प्रारम्भ (जिसमें हर एक चौथे साल में 366 दिन होते हैं और बीच के तीन साल 365 दिन के होते हैं) रोमन लोगों के समय जूलियस सीज़र के राज्य में हुआ। इसमें सौर वर्ष का 365¼ दिन का होना ध्यान में लिया गया है। बहुत समय बीतने के बाद यह व्यवस्था भी गलत हो जाती थी। आधुनिक कैलेन्डर पोप ग्रेगरी के समय 1582 ई. में चला। इस पद्धति में, कोई साल लीप वर्ष (366 दिन का) तब होता जब 4 से वह विभाजित हो। लेकिन यदि यह 100 से भी विभाजित हो तब लीप वर्ष होने के लिए इसको 400 से भी विभाजित होना चाहिए। उदाहरण के लिए,

सन् 1900 लीप वर्ष नहीं था परन्तु सन् 2000 लीप वर्ष होगा।

चित्र 2. **पृथ्वी के अक्ष का झुकाव। इससे ऋतुओं की उत्पत्ति होती है**

चित्र 2 में गरमी के मध्याह्न के दिन पृथ्वी का एक विवर्धित रूप दिखाया गया है। इसमें सूर्य की किरणें पृथ्वी की ओर आती दिखायी गयी हैं। उत्तर-दक्षिण अक्ष, एक्लिप्टिक समतल (ecliptic plane) पर लम्बवत नहीं है बल्कि यह 23½° से झुका है। इसी झुकाव के कारण ऋतुऐं होती हैं।

पृथ्वी पर खड़ा एक व्यक्ति, पृथ्वी के साथ एक दिन में एक चक्कर

पूरा कर लेता है। ये लैटीट्यूड के वृत्त (circles of latitude) चित्र-2 में बिन्दु अंकित रेखाओं द्वारा दिखाये गये हैं। उत्तर ध्रुवीय वृत्त (arctic circle) के उत्तर में खड़े व्यक्ति को सूर्यास्त नहीं दिखाई देगा। वह 24 घंटे सूर्य के प्रकाश में ही खड़ा रहेगा। इसीलिए उत्तर ध्रुवीय वृत्त के उत्तर वाले भाग को "आधीरात के सूर्यवाला स्थल" कहा जाता है। यदि यह व्यक्ति ठीक उत्तर ध्रुवीय वृत्त पर खड़ा हो, तो उसे सूर्यास्त आधीरात को क्षितिज में दिखाई देगा। इस वृत्त के और दक्षिण दिशा में अगर हम आयें तो एक ऐसे स्थान पर पहुँचेंगे जहाँ गरमी के मध्याह्न के दिन (mid summers day) सूर्य सीधे ऊपर दिखाई देगा। इस वृत्त को कर्क-रेखा (tropic of cancer) कहते हैं। इस दिन भूमध्य रेखा (equator) के उत्तर में सभी स्थानों पर दिन, रात से लम्बा होगा। भूमध्य रेखा पर दिन और रात बराबर समय के होते हैं। दक्षिण ध्रुवीय क्षेत्र पर इस दिन (गरमी के मध्याह्न के दिन) सूर्योदय होता ही नहीं है।

पृथ्वी पर किसी स्थान का लैटीट्यूड बताने के लिए हम भूमध्य से प्रारंभ करते हैं और उसे डिग्री (अंश) में व्यक्त करते हैं। भूमध्य रेखा 0^0 लैटीट्यूड पर, उत्तर एवं दक्षिण ध्रुव 90° लैटीट्यूड पर, कर्क और मकर रेखायें क्रमशः 23½° उत्तर में एवं 23½° दक्षिण में, उत्तर ध्रुवीय वृत 66½° उत्तर में (66½° = 90°—23½°) और दक्षिणध्रुवीय वृत्त 66½° दक्षिण में होंगे।

चित्र 1 और 2 को देखने से यदि हम मध्यशीतकाल और विषुओं**

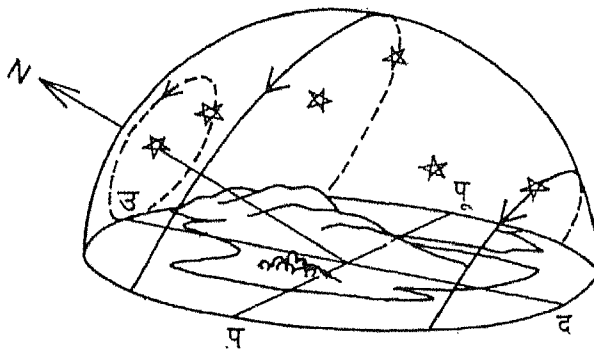
****विषुव (equinox)** — पृथ्वी की दो स्थितियाँ जिसमें दिन रात बराबर होते हैं। 21 मार्च एवं 23 सितम्बर में ये स्थितियाँ आती हैं।

(equinoxes) का नक्शा बनायें तो हमें पृथ्वी के किसी भी भाग से निम्न दिखाई देगा।

1. ध्रुवों पर 6 महीने दिन रहता है और बाकी 6 महीने रात।
2. विषुओं पर 12 घंटे का दिन और 12 घंटे की रात होती है।
3. ध्रुवों पर विषुव के समय सूर्योदय और सूर्यास्त के दिन होते हैं।
4. मध्यशील काल में मध्याह्न के समय सूर्य सीधे मकर रेखा के ऊपर रहता है।

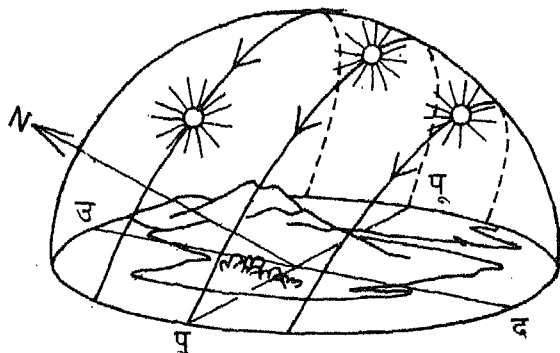
प्राचीन काल के खगोलज्ञ यह नहीं जानते थे कि पृथ्वी एक लट्टू के समान अपने अक्ष पर घूमते हुए सूर्य के चारों तरफ अपनी कक्षा में घूमती है। उनके विचार में पृथ्वी एक सपाट सतह थी जो आकाश के कटोरे से ढकी है और इस कटोरे (bowl) और पृथ्वी के बीच सूर्य और चन्द्रमा विचरते हैं। अब हम देखेंगे कि यह पुराना विचार आधुनिक विचार से कैसे संबंधित है।

मध्यशीतकाल में मध्याह्न के समय सूर्य सीधे मकर रेखा के ऊपर रहता है। तारे पृथ्वी से बहुत ही दूर हैं इसका अनुमान हम इस प्रकार लगा सकते हैं—यदि हम चित्र 1 को सिकोड़ कर एक बिन्दु बना दें तो उसी माप में पृथ्वी का सबसे निकटतम तारा 1000 मीटर पर होगा। यही कारण है कि पृथ्वी के सूर्य के चारों तरफ घूमने पर भी तारे एक दूसरे के सापेक्ष अपनी दूरी नहीं बदलते दिखायी देते। तारा मंडल सालभर एक ही जैसा दिखता है। इस तथ्य ने कि ''सभी तारे अपने निर्धारित स्थान पर रहते हैं'', विश्व के बारे में हमारे पुराने विचारों को प्रभावित किया। इस तथ्य के अनुसार तारे खगोलीय गोलक पर रोशनी के बिन्दु हैं। यदि तारों को रात के समय कई घंटे देखा जाये तो ये एक बिन्दु (खगोलीय ध्रुव) के चारों ओर घूमते नजर आयेंगे।

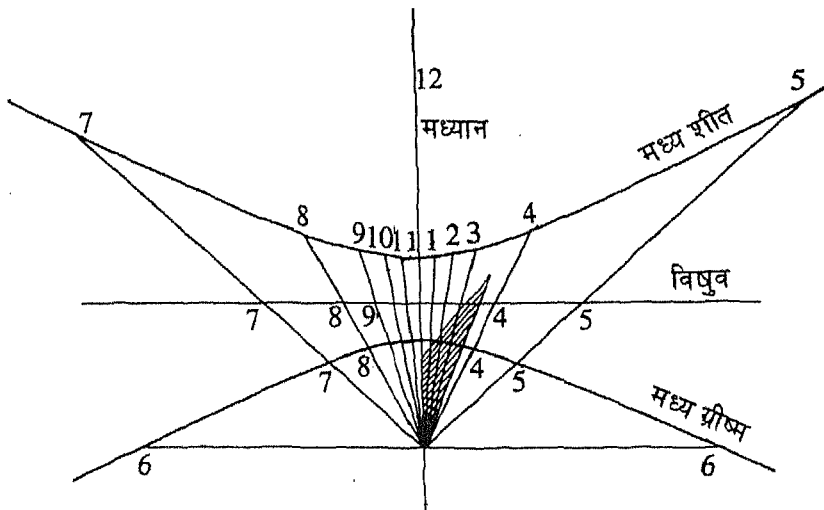
खगोलीय उत्तर ध्रुव के समीप एक तारा है जिसे पोलारिस (ध्रुव

चित्र 3. **खगोलीय ध्रुव के चारों ओर तारों का दृश्य घूर्णन**

तारा)कहते हैं। यदि एक त्रिपाद पर एक कैमरा रख कर पोलारिस का कई घंटों तक का फोटो लें तो इस तारे के घूमने का एक अद्भुत चित्र मिलेगा। आज हम यह जानते हैं कि इस तारे के बजाय पृथ्वी घूमती है। क्षितिज से पोलारिस का जो कोण बनता है वह उस स्थान (जहाँ हम खड़े हों) का लैटीट्यूट कहलाता है। प्राचीन खगोलज्ञों को यह ज्ञात नहीं था। वे समझते थे कि पूरा खगोल ही घूमता है।

दिन के समय तारों की भाँति सूर्य भी एक पथ पर भ्रमण करते दिखाई देता है। वह उत्तरी ध्रुव से गुज़रते हुए अक्ष के चारों और घूमता है (चित्र 4)

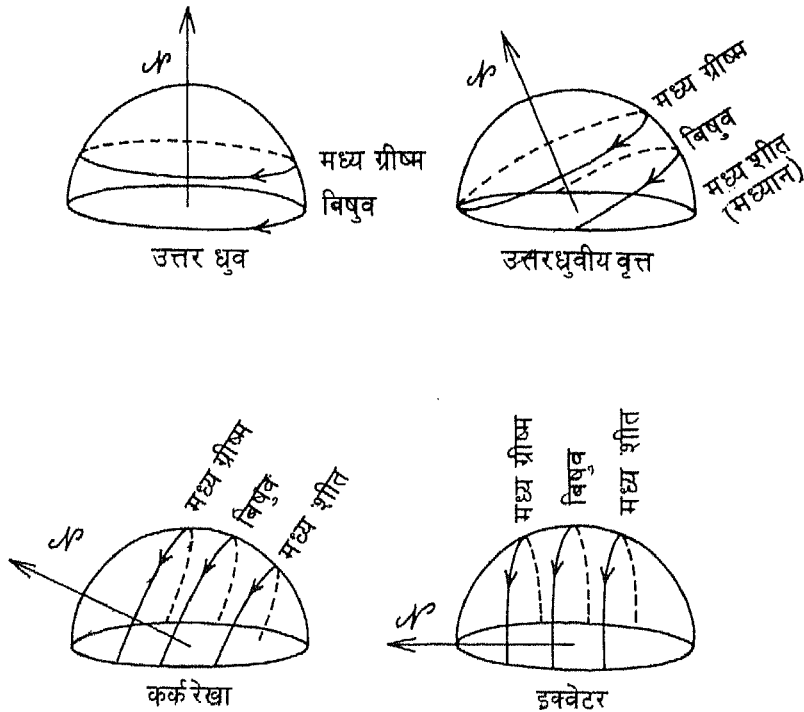
विषुवों पर, सूर्य प्रातः 6 बजे उदय होता है और शाम को 6 बजे अस्त होता है। गरमी के महीनों में वह थोड़ा पहले और थोड़ा उत्तर दिशा में उदय होता है। सूर्यास्त थोड़ी देर से एवं थोड़ा उत्तर ही में होता है। जाड़े के महीनों

चित्र 4. **सूर्य का दैनिक आकाश पथ और ऋतु के साथ उसमें अन्तर**

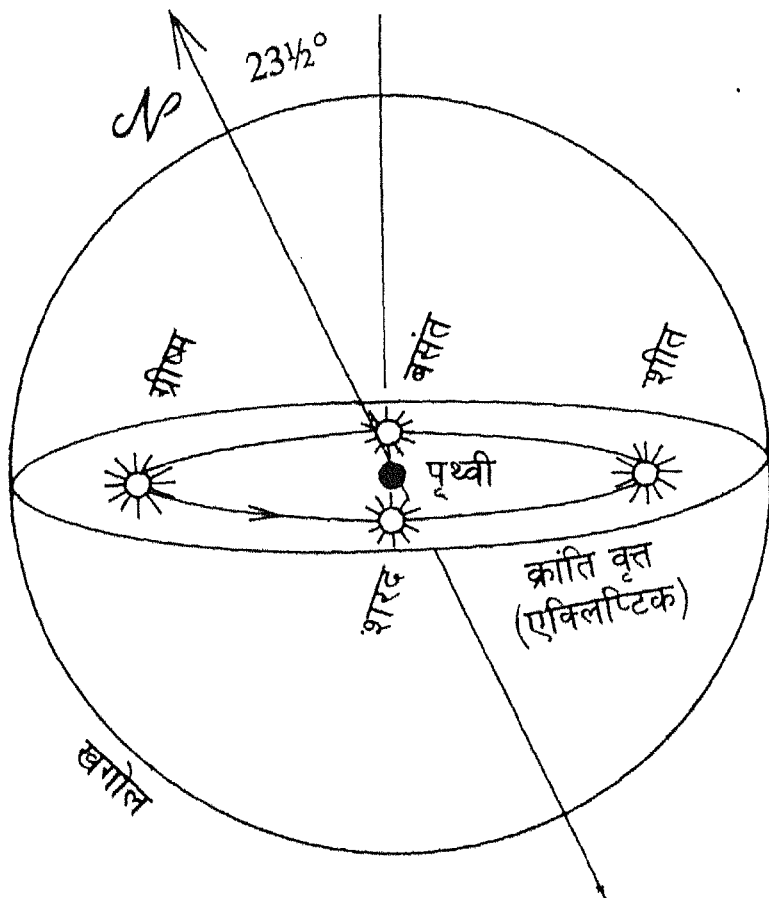
में सूर्योदय थोड़ी देर से दक्षिण की तरफ और सूर्यास्त भी थोड़ा पहले दक्षिण की ही तरफ होता है। यह सब चित्र 4 में दिखाया गया है और यह परिणाम घूमती हुई पृथ्वी के अपने अक्ष पर झुकने के कारण है। मध्यशीतकाल में मध्याह्न के समय सूर्य 23½° नीचे और अपने विषुव पर होने वाली स्थिति के दक्षिण में होता है और मध्य ग्रीष्म ऋतु में 23½° ऊपर होता है।

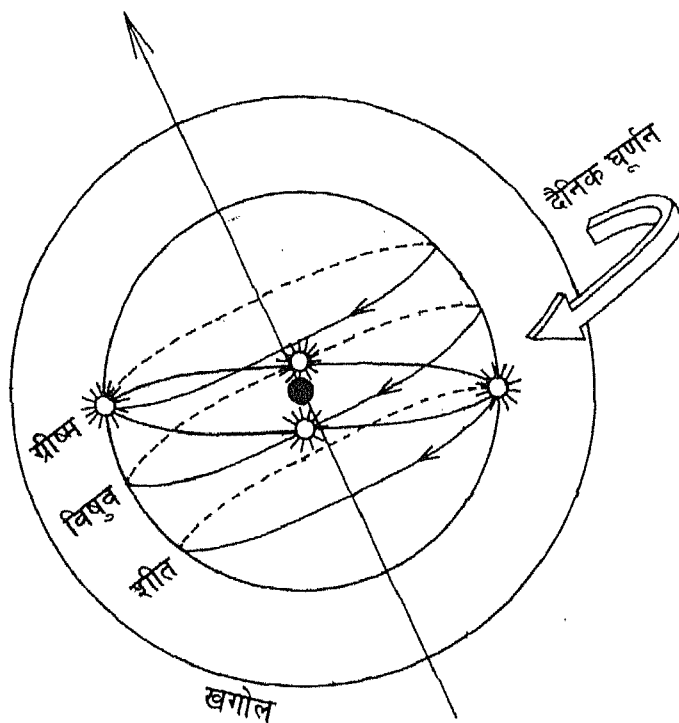
प्राचीन खगोलज्ञों ने सूर्य की आभासी (apparent) गति का विस्तारपूर्वक प्रेक्षण किया था। सूर्य का स्थान कैसे बदलता है, यह देखने के लिये हम सूर्य के प्रकाश में एक सीधी लाठी गाड़ दें और उसकी क्षैतीज सतह पर पड़ने वाली छाया को देखें। ज्यों-ज्यों सूर्य का स्थान बदलता जायेगा लाठी की छाया का भी स्थानान्तरण होता जायगा। चित्र-5 में यह दिखाया गया है कि, एक त्रिकोण धूप घड़ी की छाया पूरे दिन और साल के विभिन्न समयों में कैसे घूमती है। इसमें संख्यायें दिन के समय को बताती हैं।

चित्र 5. **धूप घड़ी (सन डायल)—छाया के स्थान में परिवर्तन सारे दिन में और वर्ष में**

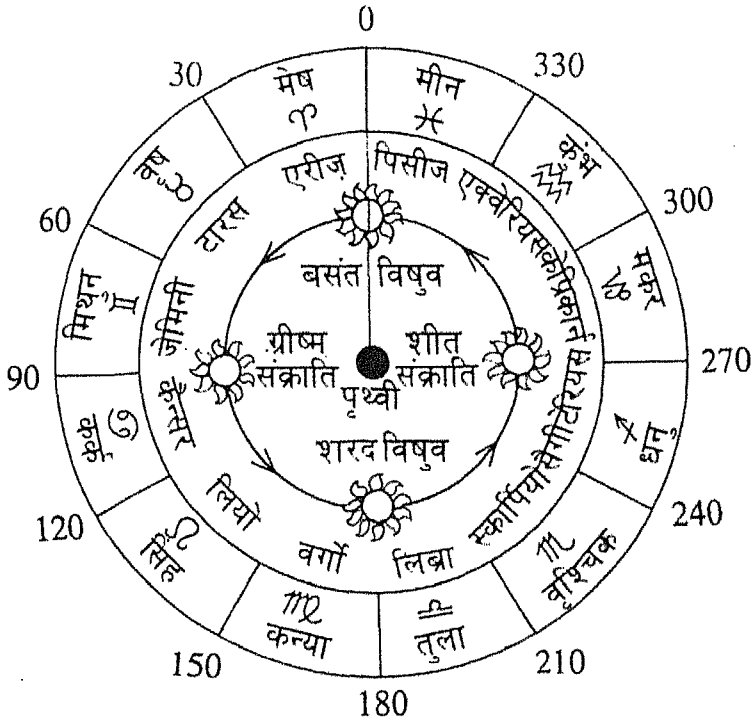
विश्व का वह चित्र जिसमें पृथ्वी समतल है और खगोलीय गोलक से ढकी है (चित्र 3 और 4) लम्बी यात्रा करने पर गलत सिद्ध होगा। यदि हम उत्तर दिशा में जायें तो उत्तरी खगोलीय ध्रुव आकाश में और ऊँचा हो जाता है (करीब 1° हर एक 70 मील की यात्रा पर) और दक्षिण दिशा में जाने पर नीचे हो जाता है।

यह तस्वीर लैटीट्यूड के अनुसार कैसे बदलती है यह चित्र 6 में दिखाया गया है। इससे यह स्पष्ट व निर्णायक रूप से सिद्ध हो जाता है कि

पृथ्वी चपटी नहीं है। सूर्य आकाश में किस स्थान पर होगा, यह पृथ्वी के उस स्थान पर निर्भर करता है जहां से हम उसको देखते हैं। इस प्रेक्षण से यूनानी

चित्र 6. **सूर्य का आकाश में पथ, पृथ्वी के भिन्न-भिन्न स्थानों से देखने पर**

गणितज्ञ एराटॉस्थिनीस ने पृथ्वी के आकार का परिकलन किया। यह ईसा से 200 वर्ष पहले हुआ।

चित्र 7. भूकेन्द्रित चित्र, सूर्य एक वर्ष में पृथ्वी के चारों ओर यात्रा पूरी करता है

कुछ और प्रमाण मिलने पर यही निष्कर्ष निकला कि पृथ्वी गोल है। जैसे, कोई जहाज़ बन्दरगाह से छूटे तो वह क्षितिज में डूबता नजर आता है और चन्द्रग्रहण के समय पृथ्वी की छाया चन्द्रमा पर गोल पड़ती है। इन

चित्र 8. **खगोल का दैनिक घूर्णन**

तथ्यों के आधार पर यह विचार छोड़ना पड़ा कि पृथ्वी चपटी है और खगोलिक अर्ध गोल से ढकी है। इसके बजाय यह सिद्ध हो गया कि पृथ्वी गोल है और उसके चारों तरफ खगोलिक आकाश है। खगोलीय गोल

चित्र 9. **तारा मंडल के बीच में सूर्य का वार्षिक पथ**

(celestial sphere) के अन्दर सूर्य पृथ्वी के चारों ओर वार्षिक कक्षा में घूमता है। चित्र 8 के अनुसार, पृथ्वी स्वयं नहीं घूमती अपितु उसके चारों ओर खगोलिक तारे और सूर्य घूमते हैं—स्पष्ट हो जाता है।

पृथ्वी अपने अक्ष पर घूमती है यह विचार बाद में आया। भूकेन्द्रीय खगोल के मॉडल द्वारा सूर्य के स्थान का वार्षिक परिवर्तन और उसके हर एक दिन का पथ, उतनी ही आसानी से समझा जा सकता है जितना कि आधुनिक सूर्य केन्द्रित मॉडल द्वारा। खगोलिक गोल का दैनिक आवर्तन, अपने साथ सूर्य को पृथ्वी के चारों ओर एक दैनिक पथ पर ले जायेगा। इस दैनिक पथ का स्थान हर वर्ष बराबर बदलता रहेगा जैसा कि दिखाई देता है।

सूर्य का 'वार्षिक पथ' खगोलिक गोल पर एक बड़ा वृत्त बनाता है जिसे एक्लिप्टिक (Ecliptic) कहते हैं (चित्र 7 देखिए)। बैबीलोन के खगोलज्ञों ने इस वृत्त को बारह बराबर भागों में बाँटा तथा इन भागों के नाम तारा-मंडलों (जो उन भागों में थे) के आधार पर रखे। यूनानी नाम जो आजकल भी प्रयोग में आते हैं, इस प्रकार हैं : ऐरीज (रैम, भेढ़ा), टारस (बुल्ल, वृष), जेमिनी (मिथुन), केन्सर (केकड़ा), लियो (सिह), विरगो (कन्या), लिब्रा (तुला), स्कोरपियो (वृश्चिक), सेगिटेरियस (धनु), केप्रिकार्न (मकर) एक्वेरियस (कुंभ), पिसिज (मीन)। ये बारह तारा-मंडल आकाश में तारों की पट्टी (बैंड) बनाते हैं, जिन्हें जोडियाक (Zodiac) (यूनानी ''जोडियाकीस कीक्लोस'' पशुओं का वृत) कहते हैं। हर वर्ष सूर्य इन तारा मंडलों से गुज़रता है, जैसा कि चित्र 9 में दिखाया गया है। हम लोग सूर्य को तारों की पृष्ठभूमि में तारों के साथ आकाश में नहीं देख पाते हैं क्योंकि तारे सूर्य के प्रकाश में दिखाई नहीं देते। इन्हें देखना केवल उसी समय संभव है जब पूर्ण सूर्यग्रहण हो। इस समय चन्द्रमा सूर्य को ढक लेता है और सूर्य का

प्रकाश बहुत कम हो जाता है। आकाश के नीले प्रकाश (जो सूर्य का प्रकीर्ण (Scattered) प्रकाश है) की अपेक्षा तारों का प्रकाश बहुत मंद है। इसलिए दिन में तारे दिखाई नहीं देते। इनके प्रकाश के मंद होने का कारण उनकी (सूर्य की अपेक्षा) हमसे बहुत अधिक दूरी का होना है।)

तारा-मंडलों के जो प्रतीक (Symbol) दिखाये गये हैं वे बहुत ही प्राचीन हैं। उनकी उत्पत्ति कब व कैसे हुई, कुछ पता नहीं। लेकिन यह अनुमान किया जाता है कि शायद ये प्रतीक बेवीलोनिया में उत्पन्न हुये।

हिपाकरस (360 ईसा पूर्व) ने सूर्य, चन्द्रमा और ग्रहों का एक्लिप्टिक स्थान मापने के लिए एक प्रणाली चलायी। इस प्रणाली में सूर्य का स्थान बसन्त ऋतु के विषुव पर 0° माना गया। आकाश में इस स्थान को 'ऐरीज स्थित बिन्दु' कहते हैं। यह प्रणाली आधुनिक खगोल शास्त्र में अभी भी प्रयुक्त होती है।

बसंत विषुव के समय, अगर तारों भरे आकाश की पृष्ठभूमि में सूर्य का स्थान मापा जाये तो यह पता चलता है कि उसका स्थान धीरे-धीरे बदलता है। ऐसा प्रतीत होता है कि जोडियाक (चित्र 9) उलटे दिशा में घूम रहा है।

इसके एक पूर्ण परिक्रमण में 25,800 वर्ष लगते हैं। यह बात प्राचीन बैवीलोनियन खगोलज्ञों को चार या पांच हजार वर्ष पहले मालुम थी। इसको विषुवों का पुरस्सरण (Precession) कहते हैं।

हिपाकरस के समय से अब तक करीब दो हजार वर्ष बीत चुके हैं इसलिए ऐरीज स्थित बिन्दु अब वहां नहीं है। अब यह मीन तारा-मंडल में है और बाद में कुंभ में प्रवेश करेगा।

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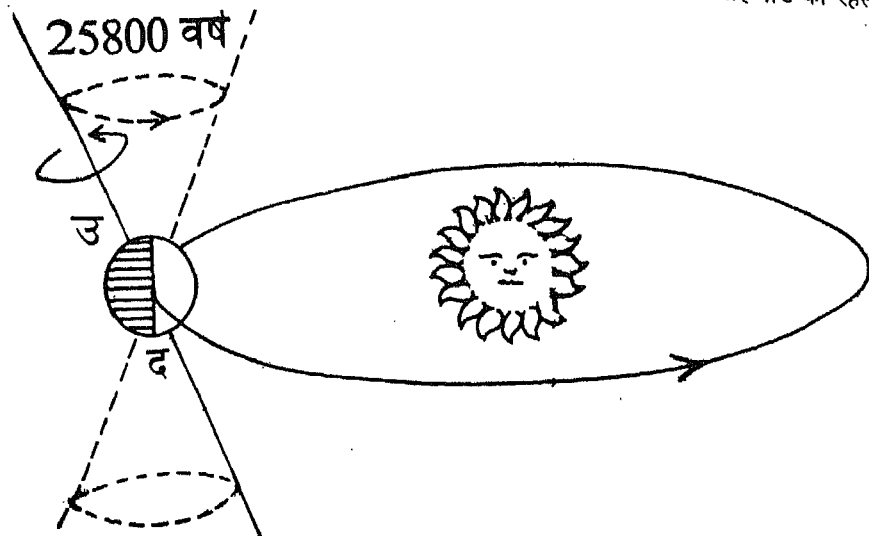
चित्र 10 **विषुव अयन**

विषुवों के पुरस्सरण का कारण पृथ्वी के अक्ष की दिशा का धीरे-धीरे बदलना है, जैसा कि चित्र 10 में दिखाया गया है।

पृथ्वी के अक्ष का पुरस्सरण होने से खगोली ध्रुवों का स्थान बदलता है। उत्तरी ध्रुव एक रेखा बनाता है जो एक 23½° का वृत्त है। उत्तरी ध्रुव को इस वृत्त पर एक बार घूमने में 25,800 वर्ष लगते हैं। चूँकि ध्रुवों का स्थान बदलता रहता है इसलिए पोलारिस हमेशा खगोली ध्रुव का संकेत नहीं करेगा।

हमने पहले यह बताया है कि एक वर्ष उस समय को कहते हैं जो दो उत्तरोत्तर बसंत विषुवों में लगता है। यह औसत 365.2422 दिनों का 'सायन वर्ष'' (Tropical year) कहलाता है। यही वर्ष ऋतुओं के साथ चलता है और कैलेन्डर के लिए समय की प्राकृतिक इकाई के रूप में इसका

प्रयोग होता है। इसकी अपेक्षा "नाक्षत्र वर्ष" (Siderial year) वह समय है जो सूर्य को जोडियाक के किसी एक स्थान पर लौटने में लगता है। विषुवों के पुरस्सरण के कारण यह समय "सायन वर्ष" से 20 मिनट अधिक है। नाक्षत्र वर्ष 365.2464 दिनों का होता है।

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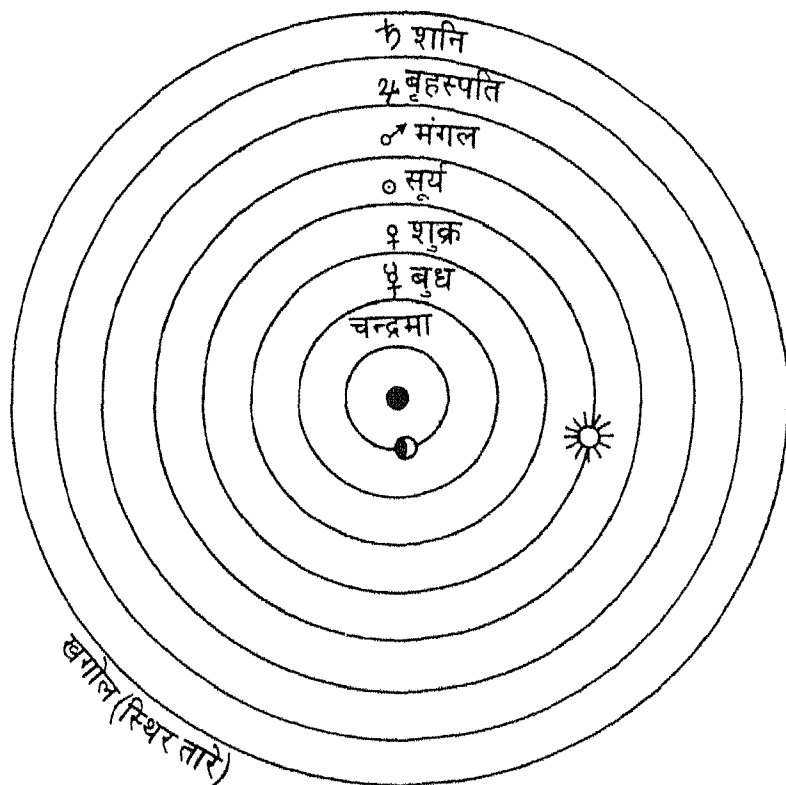
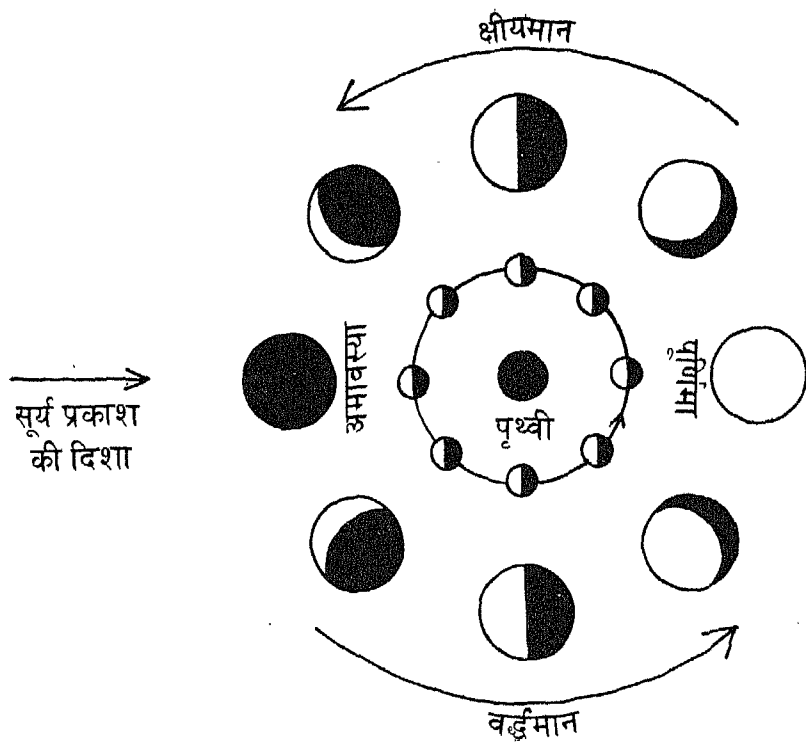
चन्द्रमा और ग्रह

चन्द्रमा और ग्रहों का पथ ऐक्लिप्टिक के काफी करीब होता है। हमारे प्राचीन पूर्वज पांच ग्रहों को जानते थे बुध, शुक्र, मंगल, बृहस्पति और शनि। उन्होंने उस समय एक अच्छा अनुमान लगाया था कि वह ग्रह जो सबसे तेज़ चलता है वह पृथ्वी के सबसे निकट है। इस प्रकार विश्व का ऐसा चित्र बना जिसमें सात खगोलनीय पिंड पृथ्वी का परिसंचार करते हैं (चित्र 11)। चित्र में हमने ग्रहों के पुराने प्रतीक लिखे हैं।

इस चित्र में सूर्य और चन्द्रमा का जो विवरण दर्शाया गया है उससे चन्द्रमा की कला (phase) का ज्ञान होता है और ग्रहणों की जानकारी भी मिलती है। चन्द्रमा की कला को इसलिए आसानी से समझाया जा सकता है क्योंकि चन्द्रमा गोल है और सूर्य से प्रकाशित है।

चित्र 12 में चन्द्रमा को उसकी कक्षा (Orbit) में दिखाया गया है।

चित्र 11. **प्राचीन भूकेन्द्रित खगोलिक शास्त्र में सूर्य, चन्द्रमा और ग्रहों की कक्षा**

इससे यह भी पता चलता है कि चन्द्रमा का प्रकाशित भाग महीने के भिन्न-भिन्न समय में कैसा लगता है।

चित्र 12. **चन्द्रमा की कला**

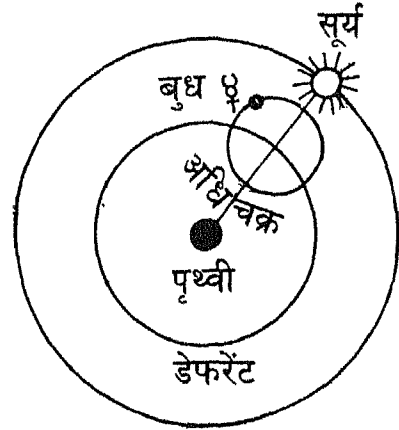
एक पूर्णिमा से दूसरी पूर्णिमा तक का समय 'संयुति मास' (Synodic month) कहलाता है। यह 29.5306 दिन का होता है। चन्द्रमा जब पृथ्वी

के चारों ओर अपनी कक्षा में आगे बढ़ता है तब पृथ्वी भी सूर्य के चारों ओर अपनी कक्षा में आगे बढ़ती है। इसलिए चन्द्रमा का पृथ्वी के चारों ओर घूमने का वास्तविक समय इस एक संयुति मास से थोड़ा कम है। चन्द्रमा को 27.3217 दिन लगते हैं। इस समय को नाक्षत्र मास कहते हैं। आर्यभट्ट (476-550, पाटलीपुत्र) ने ग्रहण का कारण बताया था। चन्द्रग्रहण पूर्णिमा के दिन होता है और इस दिन पृथ्वी की छाया चन्द्रमा पर पड़ती है। यह हर एक मास में नहीं होता क्योंकि चन्द्रमा की कक्षा का तल, एकलिप्टिक तल से थोड़ा तिरछा है। इसलिये चन्द्रमा अक्सर इस छाया से बाहर होता है। सूर्यग्रहण आमावस्यां (नवचन्द्र) के दिन होता है जब चन्द्रमा सूर्य के सामने आ जाता है।

ब्रह्मांड का जो साधारण चित्र (चित्र 11) दिखाया गया है वह तारों के बीच में ग्रहों की गति समझाने के लिए पर्याप्त नहीं है। कोई भी ग्रह जोडियाक में, बदलती गति से चलता है। कभी-कभी जब वह उल्टी दिशा में चलता है तो इसे पश्चगति (Retrograde motion) कहते हैं। इनमें बुध और शुक्र का एक विशेष स्थान है क्योंकि वे सूर्य की स्थिति से बहुत दूर वाली स्थिति में नहीं दिखाई देते। इसलिये ये पश्चिम में संध्या समय या पूर्व में प्रातः काल दिखाई देते हैं। बुध, सूर्य के 24° के अन्दर और शुक्र, 45° के अन्दर रहता है।

इन बातों को समझाने का पहला प्रयास इयूडोक्सस (408-355 ईसा पूर्व) ने किया। उन्होंने सकेन्द्रीय क्रिस्टलीय गोलों (Concentric Crystalline spheres) की कल्पना की। सबसे बाहर का गोला खगोलीय गोल था और तारों से युक्त था। सूर्य, चन्द्रमा और ग्रह उनसे छोटे गोलों से संबद्ध थे। प्रत्येक गोला अपने अक्ष पर धुराग्रस्त था और उसके अक्ष के सिरे दूसरे बड़े गोले से सम्बद्ध थे। यदि इसे पृथ्वी पर से देखा जाये (जो खगोलीय गोल का

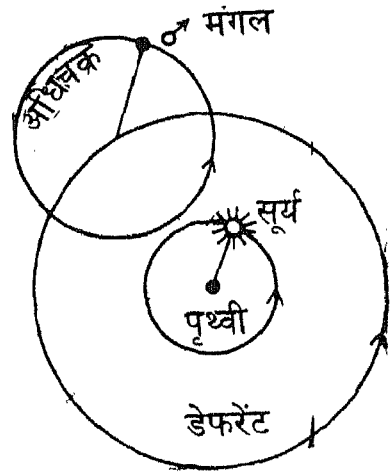
केन्द्र मानी गई है) तो यह बृहत् प्रणाली किसी भी ग्रह में पश्चगति पैदा कर सकती है। लेकिन ग्रहों की गति को ठीक तरह से प्रागुक्त (Predict) करने के लिए 55 गोलों की आवश्यकता पड़ती है और इसीलिए इनका परिकलन अत्यन्त ही जटिल समझा गया है।

हिपाकरस (150 ईसा पूर्व) का सिद्धांत टोलेमी (100-178 ई.) द्वारा विस्तार करने के बाद, टोलेमिक प्रणाली कहलाने लगा। यह प्रणाली ग्रहों की गति ठीक बुनियादी तरह से प्रागुक्त करने का एक साधन हो गई। 16वीं शताब्दी में जब सूर्य केन्द्रित कोपरनिक्स की प्रणाली आयी तब टोलेमिक प्रणाली का प्रयोग बंद हो गया।

चित्र 13. बुध और शुक्र के गति के लिए टोलेमी प्रणाली

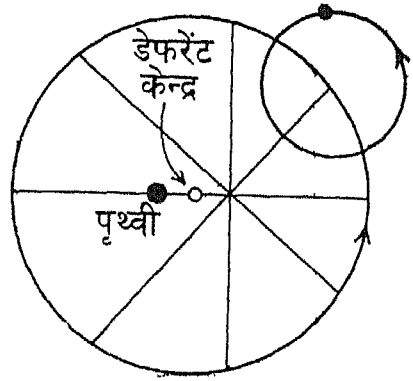
टोलेमिक प्रणाली में हर एक ग्रह अपने वृत में चलता है। इस वृत को अधिचक्र (Epicycle) कहते हैं। इस अधिचक्र का केन्द्र एक बड़े वृत में चलता है जिसे डेफरेन्ट (Deferent) कहते हैं। पृथ्वी सभी "डेफरेन्ट" का केन्द्र है। ये बुध के लिए चित्र 13 में दिखायी गई है और चित्र 14 में मंगल के लिए।

जब एक ग्रह पृथ्वी के सबसे निकट होता है तब उसकी पश्चगति कैसे होती है? बुध या शुक्र का सूर्य से एक सीमित कोणीय अंतराल (दूरी) तभी

निश्चित है जब इनके अधिचक्र के केन्द्रों को सूर्य के साथ घूमने दिया जाये। ऐसा करने से पृथ्वी, अधिचक्र का केन्द्र और सूर्य एक ही रेखा पर रहेंगे।

किसी बाहरी ग्रह जैसे मगल, बृहस्पति या शनि की उनके अधिचक्र के चारों ओर की गति को नियमित करने के लिए जरूरी है कि इस ग्रह की, अधिचक्र के केन्द्र के साथ जोड़ने वाली रेखा, पृथ्वी और सूर्य को मिलाने वाली रेखा के समानान्तर हो। एक और प्रतिबन्ध इस सिद्धान्त में है। इसमें विभिन्न "डेफरेंट" के केन्द्र पृथ्वी के साथ संपाती नहीं होने चाहिए। तब अधिचक्र का केन्द्र डेफरेंट के चारों ओर एक समान घूमेगा। लेकिन ऐसा हमें तब प्रतीत होगा जब हम यह पृथ्वी से नहीं बल्कि उस स्थान से देखें जो अधिचक्र के केन्द्र से उतनी ही दूरी पर हो जितना पृथ्वी से, परन्तु पृथ्वी से विपरीत दिशा में।

चित्र 14. **बाहरी ग्रहों के लिए टोलमी प्रणाली**

इस अतिरिक्त प्रतिबंध के साथ टोलेमिक प्रणाली ग्रहों की गति बहुत ठीक प्रागुक्त करती है। इसके लिए कुछ प्राचलों (Parameters) को जानना जरूरी है। जैसे उत्केन्द्रता (Eccentricity), डेफरेन्ट के केन्द्र का पृथ्वी से

विस्थापन एवं इस विस्थापन की दिशा, अधिचक्र और डेफरेन्ट के चारों ओर कोणी घूर्णन की दर, और अधिचक्र और डेफरेन्ट के त्रिज्याओं (Radii) का अनुपात आदि। ये प्राचल हर ग्रह के लिए प्रायुक्त होते हैं। इस संबंध में वास्तविक दूरी जानना जरूरी नहीं है। (टोलेमी के समय ये दूरियां नहीं मालूम थीं।) इसमें कुछ और शोधन किया गया है, जैसे कि वृत्तियों के समतल (Plane) को विभिन्न छोटे कोणों पर झुकाना।

चित्र 15. डेफरेंट केन्द्र से पृथ्वी का सरन और अधिचक्र केन्द्र की सूक्ष्म गति

बाद की शताब्दियों में और यथार्थता की खोज हुई। इसके लिए उनका द्वितीयक अधिचक्र (Secondary epicycle) निर्माण करना पड़ा जो पहले अधिचक्र पर घूमता था। इस कारण यह प्रणाली बड़ी ही जटिल हो गयी।

चित्र 16. हेराकलाइडस की प्रणाली (388-315 ई. पू.), बुध और शुक्र, सूर्य की परिक्रमा करते हैं।

यदि हम यह कल्पना करें कि सूर्य की कक्षा एवं बुध और शुक्र के

डेफरेन्ट तीन अलग वृत नहीं हैं, बल्कि एक ही हैं, तब काफी सरलता हो जाती है (चित्र 16) और तब हम बुध और शुक्र को सूर्य के चारों ओर घूमते हुए पायेंगे (जबकि सूर्य और दूसरे ग्रह पृथ्वी के चारों ओर)।

हेराक्लाइडस (388-315 ईसा पूर्व) ने कहा था कि बुध और शुक्र, सूर्य के चारों ओर घूमते हैं। यह विचार टाइको ब्राहे (1546-1601) ने पुनः फैलाया। उनकी प्रणाली में सूर्य पृथ्वी के चारों ओर घूमता है और ग्रह सूर्य के चारों ओर (चित्र 17)।

चित्र 17. **टाइको की भूकेन्द्रित प्रणाली**

सूर्यमंडल सूर्य केंद्रित है। यह प्राचीन भारतीय खगोलज्ञों को शायद मालुम था (आर्यभट्ट (476-550), वराहमिहिर (505))। लेकिन इसका श्रेय यूरोपियन कोपरनिकस (1473-1543) को मिलता है। कोपरनिकस ने पृथ्वी के बजाय सूर्य को केन्द्र माना। उसके अनुसार पृथ्वी व अन्य ग्रह सूर्य के चारों ओर घूमते हैं। कोपरनिकस के इन विचारों से खगोल शास्त्र में क्रांति आ गई (चित्र 18)। इस सूर्य केन्द्रित सूर्यमण्डल का विचार प्राचीन यूनानी अरीस्टारकस (310-330 ईसा पूर्व) ने भी सुझाया था, लेकिन जिस पुस्तक में उन्होंने यह बात कही थी वह उपलब्ध नहीं है। इस बारे में हमें दूसरे लोगों

के कथन से ही पता चलता है। लेकिन दूसरे प्राचीन खगोलज्ञों ने इस बात और विचार पर ध्यान नहीं दिया। उन्हें घूमती हुई पृथ्वी असम्भव नहीं लगी।

यह समझना जरूरी है कि गणित के विचार से कोपरनिकस (सूर्य-केन्द्रित) प्रणाली और टोलेमिक (भूकेन्द्रित) प्रणाली दोनों ही एक दूसरे के समतुल्य हैं। टोलेमिक प्रणाली का ऐसा पुनर्विन्यास किया जा सकता है कि बुध और शुक्र, सूर्य के चारों ओर घूमें (चित्र 16) जिससे कि मंगल, बृहस्पति और शनि के अधिचक्र सूर्य की कक्षा के बराबर हो जाए। इसके बाद सूर्य की गति को पूरे मंडल के वृत्त से घटाने पर हम कोपरनिकस की प्रणाली पर पहुँचेंगे। इसके अलावा भी हम कोपरनिकस प्रणाली पर ग्रहों की सूर्य से आपेक्षित दूरी सही मिलने पर पहुँच सकते हैं। यह अनुमान किया जाता है कि कोपरनिकस ने अपना सिद्धान्त बनाने में इसी रास्ते का प्रयोग किया होगा।

चित्र 18. **कोपरनिकस की सूर्यकेन्द्रित प्रणाली**

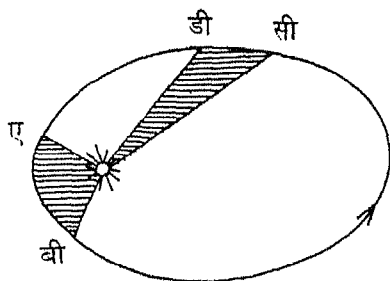
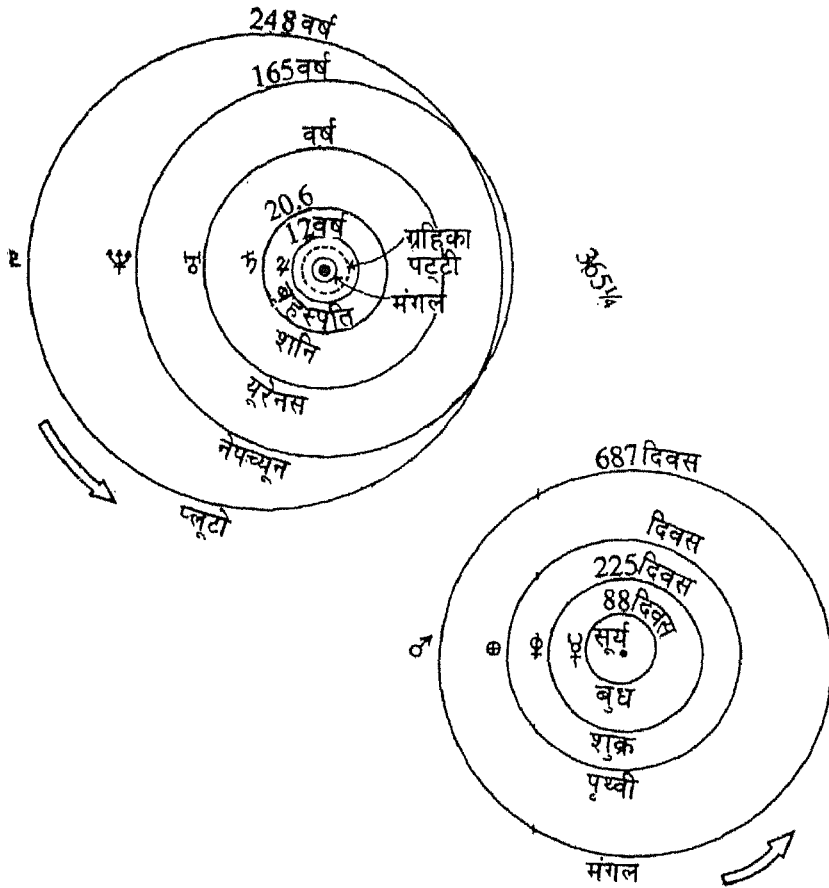
सही व यथार्थ भविष्यवाणी करने के लिए, सूर्य केन्द्रित प्रणाली में भी अधिचक्रों की आवश्यकता पड़ी। लेकिन अब अभिकलन काफी आसान हो गया है।

दूसरी बड़ी प्रगति केप्लर (1571-1630) द्वारा हुई। वे टाइको ब्राहे के छात्र थे। टाइको ने ग्रहों की गति को बड़ी सावधानी से देखा और अंकित किया। केप्लर ने सोचा कि, कोपरनिकस प्रणाली में ऐसा कौन-सा परिवर्तन किया जा सकता है जिससे उसकी प्रागुक्ति टाइको के अंकित किये हुए आंकड़ों (Data) से मिले। केप्लर के ज्यादातर प्रयास मंगल की कक्षा के विषय में हुए। वे कई वर्ष तक लगातार काम करने के बाद तीन सरल व सुन्दर नियमों पर पहुँचे। इनका नाम अब केप्लर का नियम "ग्रहों की गति का नियम" पड़ा। उनकी पुस्तक "मंगल ग्रह की गति-नया खगोल शास्त्र" 1609 में प्रकाशित हुई।

केप्लर ने यह समझ लिया था कि ग्रह जिस पथ पर चलते हैं वह वृत नहीं है। उनकी कक्षा की आकृति दीर्घवृत (Ellipse) है। केप्लर के तीन नियम इस प्रकार हैं :

(1) हर एक ग्रह दीर्घवृत में घूमता है। सूर्य इसकी एक नाभि पर है।

(2) ग्रह की गति ऐसी रहती है कि सूर्य और ग्रह को आपस में जोड़ने वाली रेखा बराबर समय में बराबर क्षेत्र तय करती है।

(3) ग्रह के चारों ओर एक पूर्ण परिक्रमण के समय का वर्ग ग्रह से सूर्य तक की औसत दूरी के घन (Cube) का समानुपाती है।

चित्र 19. **केप्लर के नियम : एक ग्रह सूर्य के चारों ओर इलिप्स में घूमता है। सूर्य एक नाभि (फोकस) पर रहता है। यह ग्रह बराबर समय में बराबर क्षेत्र प्रसर्प करता है।**

चित्र *20.* सूर्य मंडल—स्केल के अनुसार कक्षा करीब वृत्तिक है, पृथ्वी के कक्ष की त्रिज्या 15 करोड़ किलोमीटर है।

चित्र 19 में पहला और दूसरा नियम समझाया गया है। यदि दोनों छायामय क्षेत्र (shaded areas) बराबर हों तो दूसरे नियम के अनुसार एक ग्रह का "ए" से "बी" तक जाने का समय, "सी" से "डी" तक जाने के समय के बराबर होगा।

ग्रहों की कक्षा के दीर्घवृत करीब-करीब वृत जैसे हैं। दीर्घवृत के आमाप (size) को देखते हुए दोनों नाभियां (Foci) करीब हैं। लगभग वृत्तिक कक्षा के लिए टोलेमी के नियम (चित्र 15 देखें), केप्लर के पहले दो नियमों के काफी करीब हैं। यह समझना कठिन है कि टोलेमी ने इस बात को कैसे सोचा।

चित्र 20 में हमने आधुनिक सूर्यमण्डल को दिखाया है। इसमें सूर्य से ग्रहों की दूरी स्केल के अनुसार है। इसमें तीन नये ग्रह यूरेनस, नेपच्यून और प्लूटो, उनकी कक्षाऐं, आर्वतकाल (Period) और दूरियाँ दिखाई गई हैं।

3

गुरुत्व

पिछले भागों में हमने यह देखा कि हजारों वर्ष के प्रेक्षण और चमत्कारी सैद्धान्तिक निगमन के बाद ही सूर्यमण्डल का आधुनिक चित्र मिला। इसमें, सूर्य केन्द्र में है और इसके चारों ओर पृथ्वी और अन्य ग्रह दीर्घवृत्तिक कक्षा में घूमते हैं। लेकिन केप्लर के समय यह ज्ञात नहीं था कि ग्रहों की ऐसी गति किस बल (Force) के कारण होती है। आधुनिक गतिक शास्त्र (Dynamics) हमें किसी पदार्थ की गति और उस पर लगने वाला बाहरी बल, उनका सम्बन्ध, और गुरुत्व का सिद्धान्त जो ग्रहों और चाँद की कक्षीय गति पर आधारित है, समझाने में मदद करता है। जिस वैज्ञानिक ने इस सिद्धान्त को दिया उसका नाम ''सर आइजक न्यूटन (1642-1727)'' था।

न्यूटन का महान कार्य प्रिंसिपिया (Principia*) 1687 में प्रकाशित

*Principia का पूरा लैटिन है– Philosopiae naturalis principia mathematica — the mathematical principle of natural philosophy.

हुआ। न्यूटन के पहले यह धारणा थी कि किसी भी वस्तु को गति की अवस्था में रखने के लिए उसके ऊपर किसी बल का प्रयोग करना आवश्यक है और यदि वह बल हटा दिया जाए तो वह वस्तु विराम की अवस्था में आ जायेगी। न्यूटन को यह बात सूझी कि ऐसा नहीं हो सकता है क्योंकि अगर किसी वस्तु की गति सीधी रेखा में है और स्थायी है तो यह उस वस्तु की प्राकृतिक अवस्था है। इसके लिए किसी बल की आवश्यकता नहीं है। न्यूटन के अनुसार किसी वस्तु पर बल लगाने से उसकी गति में त्वरण (Acceleration) होता है।

न्यूटन के तीन प्रसिद्ध नियम इस प्रकार हैं :

1. यदि किसी वस्तु पर कोई बाहरी बल न लगाया जाये तो वह जिस अवस्था (विराम अवस्था या स्थायी अवस्था) में है उसी में बनी रहेगी।
2. किसी वस्तु पर बल लगाने पर वह त्वरित होती है। उस बल का परिणाम, उस वस्तु के द्रव्यमान को उसके त्वरण से गुणा करने पर प्राप्त होता है। इसको एक समीकरण में दिखाया जा सकता है।

$$F = ma$$

यहाँ F, बल परिमाण (Force); m, द्रव्यमान (mass) तथा a, त्वरण परिमाण है।

3. क्रिया और प्रतिक्रिया बराबर और विपरीत होते हैं। उदाहरणस्वरूप जब आप खड़े होते हैं तब आपके पांव जमीन पर नीचे की ओर बल लगाते हैं और जमीन, विपरीत और बराबर बल ऊपर की ओर लगाती है।

न्यूटन के गुरुत्व सिद्धांत से हमें यह समझने में मदद मिलती है कि क्यों

स्तुओं को हाथ से छोड़ने या फेंकने पर वे जमीन पर गिरती हैं? चन्द्रमा ौर ग्रहों की कक्षा, जैसी वे हैं, वैसी क्यों हैं? इनका उत्तर है कि एक वस्तु सरी वस्तु को आकर्षित करती है। इस आकर्षण का बल, उन दोनों वस्तुओं : द्रव्यमान के समानुपाती और उनकी दूरी के वर्ग के व्युत्क्रमानुपाती होता ।

से समीकरण में हम इस प्रकार व्यक्त करते हैं, $F = \frac{GMm}{r^2}$

हाँ M, द्रव्यमान प्रथम वस्तु का; m, द्रव्यमान द्वितीय वस्तु का;
r, उनके बीच की दूरी एवं G, गुरुत्व स्थिरांक है।

प्रतिदिन प्रयोग में आने वाली वस्तुओं के बीच गुरुत्व बल इतना मज़ोर है कि उन पर हम इसका असर नहीं देख पाते हैं। लेकिन पृथ्वी तनी विशाल है कि वह साधारण वस्तुओं पर अपने गुरुत्व बल का असर खाती है। इस गुरुत्व बल के कारण हम जमीन पर खड़े हो सकते हैं तथा ोई भी चीज हाथ से छूटने पर पृथ्वी पर गिर जाती है।

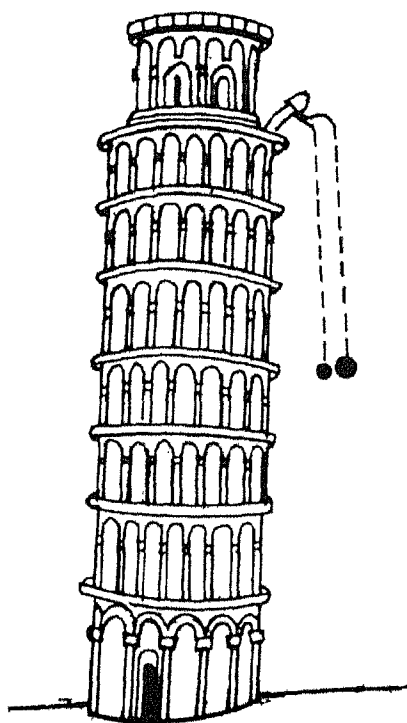
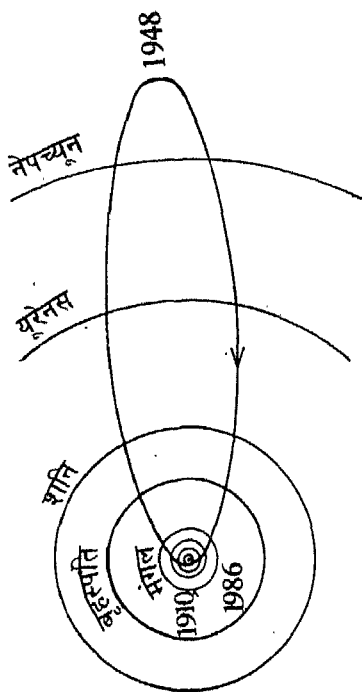
जो दो समीकरण हमने ऊपर दिये हैं, उनसे पता चलता है कि जमीन र गिरने वाली वस्तु के लिए त्वरण

$$a = \frac{GM}{R^2} \text{ है।}$$

जहां M, पृथ्वी का द्रव्यमान है तथा R, पृथ्वी की त्रिज्या (radius) है। सीलिये सभी वस्तुएं जो पृथ्वी पर गिरती हैं उनके त्वरण का परिमाण एक ी सा होता है। उनका त्वरण-परिमाण उनके आमाप (size), आकार या व्यमान पर निर्भर नहीं करता है। यह नियम गैलीलियो गैलिली (1564-

1642) ने पहले ही ज्ञात कर लिया था। इसके लिए उन्होंने एक बहुत ही सहज प्रयोग किया। कहा जाता है कि उन्होंने पीसा के टॉवर (मीनार) से भिन्न-भिन्न वस्तुओं को गिराया। इन वस्तुओं का द्रव्यमान अलग-अलग था (चित्र 21)। प्रयोग के बाद वे इस नतीजे पर पहुँचे कि इन सभी वस्तुओं को पृथ्वी पर गिरने में एक ही समय लगता है।

न्यूटन ने अपने तीन नियमों और गुरुत्व के समीकरण का प्रयोग करते हुए यह दिखाया कि चन्द्रमा पृथ्वी के आकर्षण में कैसे घूमता है। उन्होंने यह भी अनुमान लगाया कि हर एक ग्रह को सूर्य के गुरुत्व आकर्षण में उसके चारों ओर कैसे घूमना चाहिए। उन्होंने यह भी सिद्ध किया कि उनकी कक्षा दीर्घवृत्त होगी और वे केप्लर के तीनों नियमों का पालन करेंगे।

केप्लर के नियमों का एक रुचिकर अनुप्रयोग, धूमकेतुओं (Comets) की कक्षाओं का अभिकलन (Computation) करना है। धूमकेतु, ग्रहों के मुकाबले में बहुत ही छोटा पिंड है जो सूर्य के चारों ओर घूमता है। जब धूमकेतु

चित्र 21. **गैलेलियो और पीसा का टावर**

चित्र 22. **हैली धूमकेतु की कक्षा**

सूर्य के काफी निकट होता है तब उसकी एक लम्बी पूँछ बन जाती है। यह इसलिए बनती है क्योंकि धूमकेतु का मुंडक (Head) पत्थर और बर्फ से भरा होता है और सूर्य के निकट जाने पर उसके विकिरण दाब (Radiation pressure) से यह भाप के रूप में बाहर निकलता है। इसलिए ये पदार्थ सूर्य के प्रकाश में पूँछ की तरह दिखते हैं। जैसा कि आप जानते हैं, ग्रहों की कक्षा दीर्घवृत होती है, लेकिन धूमकेतुओं की कक्षा लम्बी (सिगार जैसी) होती है। यह चित्र 22 में दिखाया गया है। एक धूमकेतु का नाम भारतीय खगोलज्ञ वेनु बापू के नाम पर रखा गया है। वेनु बापू ने इसको सबसे पहले देखा था।

चन्द्रमा केवल पृथ्वी के आकर्षण में नहीं घूमता है। थोड़ा सूर्य का आकर्षण भी उसे प्राप्त है। इसलिए चन्द्रमा की गति में केप्लर के नियमों द्वारा प्रागुक्त गति से थोड़ा अन्तर हो जाता है। इसी प्रकार पृथ्वी की गति सूर्य के अलावा, दूसरे ग्रहों से भी प्रभावित होती है। सबसे अधिक प्रभाव बृहस्पति का (जो काफी अस्थूल है) पड़ता है।

यह स्पष्ट है कि यदि हम खगोली पिण्डों (ग्रह, चन्द्रमा, धूमकेतु, तारे इत्यादि) की बहुत ठीक गति जानना चाहते हैं तो गणित का जटिल परिकलन (Calculation) करना होगा। इसमें बड़े और छोटे आकर्षण, सभी का असर लेना होगा। इसीलिए कई शताब्दियों तक खगोली परिकलन करना पड़ा। इसमें विश्व के अच्छे गणितज्ञों ने इन प्रश्नों पर काम किया और इसके बाद ही हम लोगों को आधुनिक खगोल शास्त्र का ज्ञान हुआ।

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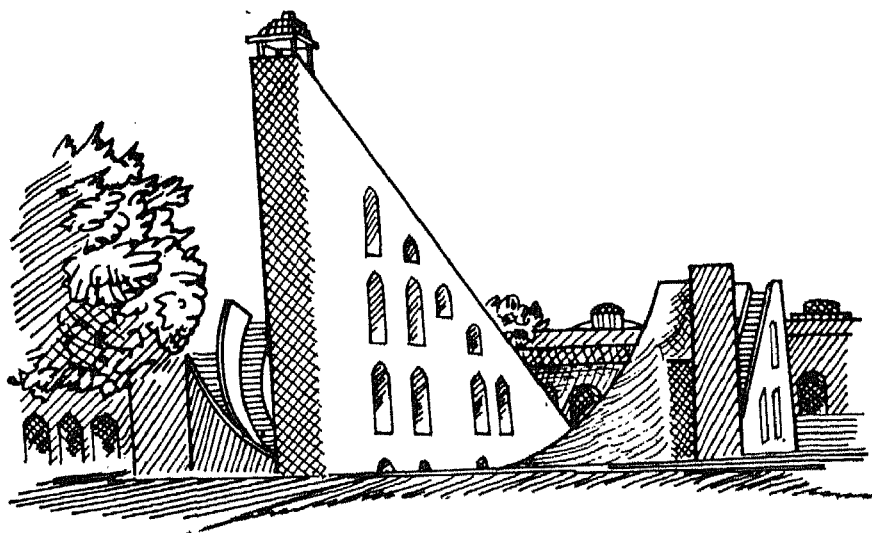
4

दूरबीन

दूरबीन का आविष्कार होने से पहले खगोल का निरीक्षण करने का एक मात्र साधन था हमारी आंखें। किन्तु अब बड़े-बड़े यंत्रों के बन जाने से हम तारों और ग्रहों का ठीक स्थान जानने में सफल हुए हैं और खगोल के विषय में और भी ज्यादा ज्ञान उपलब्ध हुआ है। डेनमार्क में स्थित अपनी प्रेक्षणशाला (Observatory) में टाइको ब्राहे ने, अपनी आंखों और कोण मापने के बड़े यंत्रों का प्रयोग करते हुए बहुत आंकड़े (data) एकत्रित किये और इन्हीं आंकड़ों का विश्लेषण करके केप्लर अपने प्रसिद्ध नियमों पर पहुंचे।

महाराजा जयसिंह (1660-1743) ने दिल्ली (1724) और जयपुर (1734) में बड़ी प्रेक्षणशालायें बनवायीं (चित्र 23) जिनका नाम जंतर मंतर है। इन विशाल यंत्रों से खगोलीय मापों में कैसे अधिक यथार्थता प्राप्त की जा सकती है, इसका यह जीवन्त उदाहरण हैं। जयसिंह ने ऐसी ही प्रेक्षणशालायें वाराणसी, उज्जैन और मथुरा में भी बनवायीं।

चित्र 23. **बृहत् सम्राट यंत्र विशाल धूप घड़ी, जन्तर मन्तर जयपुर में**

खगोल का आधुनिक प्रेक्षण, दूरबीन के आविष्कार के बाद ही हुआ कई लेन्सों के प्रयोग द्वारा दूर की वस्तुएं समीप दिख सकती हैं, इसका शोध हालैन्ड में 16वीं शताब्दी में हुआ। दूरबीन का पहला खगोलीय प्रयोग गैलीलियो ने किया। इसके लिए उन्होंने स्वयं एक दूरबीन बनायी क्योंकि हालैन्ड में बनी हुई दूरबीन उतनी अच्छी नहीं थी। गैलीलियो पहले व्यक्ति थे जिन्होंने चन्द्रमा के पर्वतों और क्रेटरों को देखा।

उन्होंने दूरबीन से सूर्य के प्रतिबिम्ब को एक पर्दे पर उतारकर पहली

बार सूर्य कलंक (Sun Spots) को देखा। वे पहले व्यक्ति थे जिन्होंने ग्रहों को एक मंडलक (disc) के रूप में देखा। इसके पहले ये ग्रह केवल नेत्र से देखने पर तारों जैसे बिन्दु दिखते थे। गैलीलियो की सबसे चमत्कारी खोज बृहस्पति के चार बड़े उपग्रहों को देखना था, जिनके नाम हैं : यो, योरोपा, गैनीमीड और कैलिस्टो। इससे पहली बार यह सिद्ध हुआ कि पृथ्वी के अलावा और ग्रहों के भी उपग्रह हैं।

सबसे प्राचीन दूरबीनों में अपवर्तन (refraction) का प्रयोग किया जाता था। इनमें एक लेन्स होता था जिससे दूर की वस्तुओं से प्रकाश इकट्ठा किया जाता था। परावर्तन दूरबीन (reflecting telescope) न्यूटन ने बनायी। इसमें अवतल दर्पण (concave mirror) का प्रयोग किया गया। दुनिया में सबसे बड़ी प्रकाशीय दूरबीन 200 इंच की परावर्तिक दूरबीन है, जो अमेरिका में कैलीफोर्निया प्रान्त के पालोमार पर्वत पर स्थापित है।

विलियम हरशैल (1738-1822) ने जेमिनी तारामन्डल में एक ऐसा पिंड देखा जो इसके पहले दिखाई नहीं दिया था। उन्होंने इसे 'धूमकेतु' समझा। लेकिन जब इसकी कक्षा का अभिकलन हुआ तब यह एक नया ग्रह निकला। इसका नाम 'यूरेनस' रखा गया।

यूरेनस के दिखाई दिये जाने के बहुत वर्ष बाद, यह पता चला कि उसकी कक्षा अन्य ग्रहों जैसी नहीं है। न्यूटन के नियमों द्वारा सूर्य के अलावा दूसरे ग्रहों के प्रभाव को सम्मिलित करके, गणना करने पर जो गति निकली वह इसकी गति से नहीं मिली। ऐडम्स (एक अंग्रेज गणितज्ञ) ने सोचा कि यूरेनस की कक्षा में अन्तर किसी अन्य ग्रह (जो अब तक नहीं दिखा है) के कारण हो सकता है। उन्होंने अभिकलन किया और राजकीय खगोलज्ञ को 1845 में सूचित किया कि किस दिशा में इस नये ग्रह को खोजा जाये। लेकिन

राजकीय खगोलज्ञ ने इस पर विश्वास नहीं किया और इसकी खोज के लिए कोई कोशिश नहीं हुई। लेकिन अगले ही साल एक फ्रांसीसी गणितज्ञ, ला वेरियर, अभिकलन करके इसी नतीजे पर पहुंचे। नया ग्रह बर्लिन की प्रेक्षणशाला से देखा गया जैसा कि ला वेरियर ने बताया था। इस नये ग्रह का नाम 'नेपच्यून' (neptune) पड़ा।

यह कहानी इस शताब्दी में फिर दोहरायी गयी। नेपच्यून की कक्षा में भी अभिकलन से अन्तर निकला। परसिवल लोवेल (1855-1916) ने नया अभिकलन किया। इसमें परसिवल लोवेल ने ऐडम और ला वेरियर की तरह एक अज्ञात ग्रह को माना और उसकी दिशा का संकेत दिया। इस प्रकार प्लूटो (pluto) को 1929 में देखा गया। प्लूटो, यूनान में पाताल के देवता हैं। इस नये ग्रह का नाम प्लूटो, परसिवल लोवेल के सम्मान में दिया गया क्योंकि उनके नाम के पहले दो अक्षर P और L से आरम्भ होते हैं।

□□

5

ग्रहिका

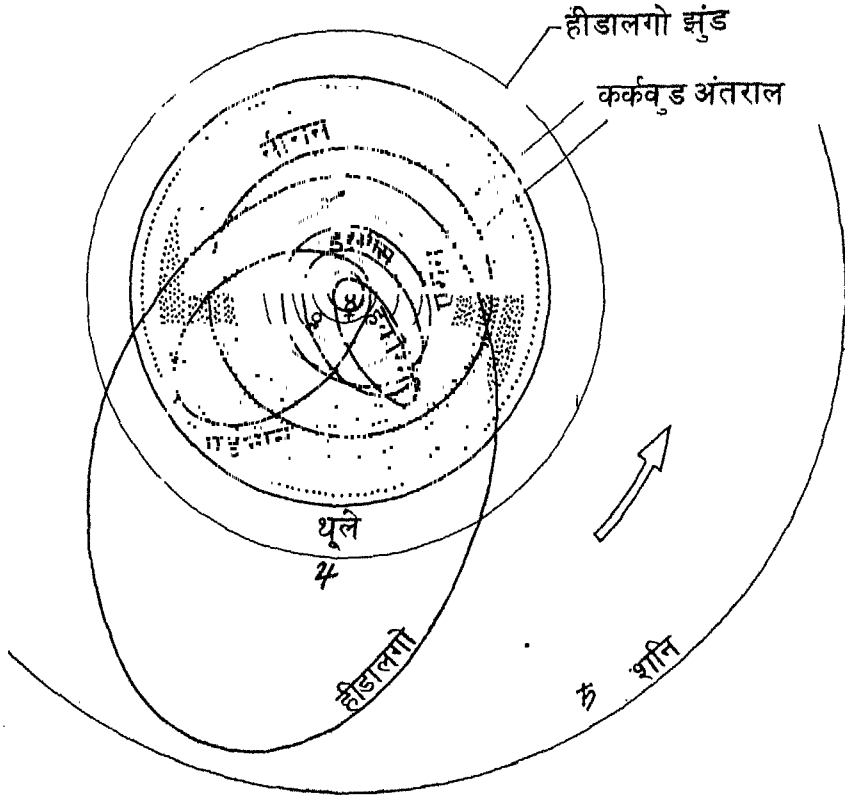
1772 में जे.इ. बोडे ने एक नया नियम दिया। यह नियम सूर्य से ग्रहों की दूरी, से संबंधित था। इसे "बोडे का नियम" कहते हैं। यह नियम कैसे काम करता है इसके वैज्ञानिक कारण का अभी तक पता नहीं लगा है। इन निम्नलिखित संख्याओं को लीजिए :

0, 3, 3×2, 3×2×2, 3×2×2×2, इत्यादि।
इनमें 4 जोड़िए और 10 से भाग दीजिए। नतीजा :
0.4, 0.7, 1, 1.6, 2.8, 5.2, 10, 19.6, 38.8 इत्यादि।

यदि पृथ्वी और सूर्य के बीच की दूरी 1 मानी जाये तो इस माप में ग्रहों की दूरियां (बोडे के समय में) इस प्रकार प्राप्त हुईं।

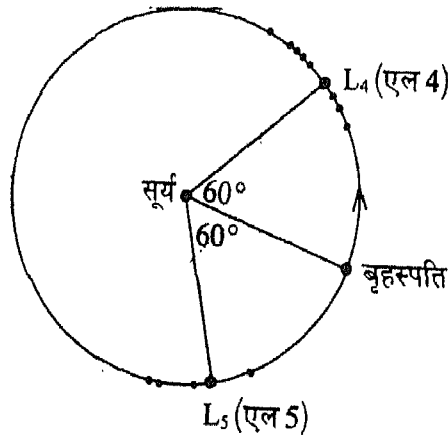
बुध 0.39, शुक्र 0.72, पृथ्वी 1, मंगल 1.54, बृहस्पति 5.2, शनि 9.54।

देखिये, ये संख्याऐं बोडे की संख्याओं से कितनी मिलती हैं। जब यूरेनस पहले देखा गया और उसकी दूरी 19.18 ज्ञात हुई तो इससे बोडे के नियम को महत्वपूर्ण पुष्टि मिली। लेकिन नेपच्यून की दूरी 30.6 ज्ञात हुई, जो कि कम है। मंगल और बृहस्पति के बीच में जो अंतराल है (दूरी 2.8) वह विस्मयकारी है। इससे यह संकेत मिलता है कि इस स्थान पर भी कोई ग्रह हो सकता है जो अब तक दिखाई नहीं दिया है। 1 जनवरी 1801 में एक ग्रहिका मिली। इसका नाम सीरीज (ceres) रखा गया। ये सिसिली में पहली बार देखी गयी थी और वहां की देवी का नाम इसको दिया गया। सीरीज दूसरे ग्रहों के मुकाबले बहुत ही छोटी है और इसका व्यास केवल 950 किलोमीटर है। कुछ साल बाद सूर्य से लगभग 2.8 की ही दूरी पर कुछ और ग्रहिकाऐं मिलीं जिनके नाम हैं : प्लास (490), जुनो (190) और वेस्टा (390)। एक जर्मन खगोलज्ञ विलियम ओलबर्स (वेस्टा के खोजकर्ता) ने यह सुझाव दिया कि ये ग्रहिकाएं किसी बड़े ग्रह के टुकड़े हैं जो किसी कारण टूट गया। इसके और भी टुकड़े मिलने चाहिए। फोटोग्राफिक साधनों से खगोल को देखने में सचमुच बहुत सी ग्रहिकाएं मिलीं। अब तक कई हजार मिल चुकी हैं और ये मंगल और बृहस्पति के बीच की पट्टी में पायी जाती हैं। इनको (जैसा ऊपर बताया गया है) ग्रहिका कहते हैं। इनके बारे में विचार है कि ये किसी ग्रह के टूटने से नहीं बनीं बल्कि वह ग्रह जो पूर्ण रूप से ग्रह नहीं बन पाया, ग्रहिका बन गया। ये ज्यादातर अनियमित आकार की होती हैं, तथा केवल बहुत बड़ी ग्रहिकाऐं ही अपने गुरुत्व से गोल आकार लेती हैं। सबसे पहले मिलीं चार ग्रहिकाऐं अब तक मिलीं ग्रहिकाओं में सबसे बड़ी हैं।

चित्र 24 में हमने ग्रहिका पट्टी दिखाई है और कुछ ग्रहिकाओं की कक्षाऐं भी। ये कक्षाऐं अनियमित हैं इसलिए कभी पट्टी के बाहर भी हो

चित्र 24. **ग्रहिका पट्टी और कुछ ग्रहिकाओं की कक्षाएँ।**

जाती हैं। ग्रहिका पट्टी में भी कुछ अंतराल है जहां ग्रहिका बहुत कम मिलती हैं। इसे खगोलज्ञ कर्कवुड ने बड़े दिलचस्प तरीके से समझाया है। यदि किसी ग्रहिका का घूर्णन काल, सबसे बड़े ग्रह बृहस्पति के घूर्णन काल के एक साधारण अनुपात में हो, तो यह ग्रहिका बृहस्पति के करीब अपनी

कक्षा में एक ही स्थान पर बार-बार आयेगी। न्यूटन के गुरुत्व के नियम का प्रयोग करते हुए कर्कवुड ने दिखाया कि ऐसा होने पर बृहस्पति उस ग्रहिका की कक्षा को क्षोभित कर, सूर्य से उसकी दूरी में काफी अन्तर पैदा कर देगा। इस पट्टी के दो मुख्य अन्तराल सूर्य से इतनी दूरी पर हैं कि बृहस्पति के घूर्णन काल के मुकाबले उनका घूर्णन 1/2 और 1/3 है। सूर्यमंडल में इस परिघटना का एक और उदाहरण है। शनि के चारों ओर जो वलय (रिंग) है वह हजारों छोटे पत्थरों (या बर्फ के टुकड़ों) से भरा है। ये शनि का घूर्णन करते हैं। इस वलय में भी एक मुख्य अंतराल है जिसे कैसिनी भाग (cassini's division) कहते हैं (चित्र 24)। इस अंतराल के पत्थरों का घूर्णन काल शनि के उपग्रह मीमास (mimas) के घूर्णन काल का 1/2 है। दो और ग्रहिका झुंड हैं जिनकी कक्षा बृहस्पति जैसी है। एक झुंड बृहस्पति से 60° आगे और दूसरा 60° पीछे रहता है। क्षोभ से ये कभी-कभी अपनी कक्षा से अलग हो जाते हैं लेकिन 60° के स्थान से बहुत अधिक नहीं भटकते। इन ग्रहिकाओं को "ट्रोजन ग्रहिका झुंड" कहते हैं। उनका बृहस्पति और सूर्य के साथ विशेष स्थान न्यूटन के गुरुत्व नियम पर आधारित फ्रांस के गणितज्ञ लाग्राज (1736-1813) के अभिकलन की अनुपुष्टि दर्शाता है। लाग्राज इस नतीजे पर पहुंचे, कि जब भी दो विशाल द्रव्यमान के पिंड होंगे (जैसे सूर्य और बृहस्पति) और वे एक दूसरे के चारों ओर वृत्त में घूमेंगे तब पांच ऐसे स्थान होंगे जहां किसी भी छोटे द्रव्यमान वाली वस्तु की कक्षा ख़ासकर स्थायी होगी। दूसरे शब्दों में इन वस्तुओं को इनके स्थान से आसानी से नहीं हटाया जा सकता है। यदि ये किसी क्षोभ से भटक भी जायें तो फिर वापस उसी स्थान पर आ जायेंगी।

इन पांच स्थानों को लाग्राज के पांच बिन्दु कहते हैं, ये हैं : एल$_1$, एल$_2$,

चित्र 25. **ट्रोजन ग्रहिका झुंड**

एल$_3$, एल$_4$, एल$_5$। पहले तीन बिन्दु उसी रेखा पर हैं जो दो विशाल द्रव्यमान पिंड से गुजरती है। ये ज्यादा स्थायी नहीं हैं। एल$_4$ और एल$_5$ बिन्दु ज्यादा स्थायी हैं। ये दोनों 60° के बिन्दु हैं जो चित्र 25 में दिखाये गये हैं।

6

कुछ नई खोजें

इस शताब्दी में सूर्य मंडल के विषय में हमारे ज्ञान में अपार विस्तार हुआ है लेकिन इस छोटी सी पुस्तक में इसका केवल सारांश ही दिया है। हमारे ज्ञान में जो भी प्रगति हुई है वह फोटोग्राफिक तकनीक के अधिशोधन के कारण हुई है। इस तकनीक द्वारा प्रकाशीय दूरबीन से डेटा मिलने में विस्तार हुआ है। इसके अलावा और भी नयी तकनीक विकसित हुई हैं जिनके द्वारा हम खगोल का निरीक्षण कर सकते हैं। ये हैं : रेडियो खगोलिकी, एक्स-रे खगोलिकी, अवरक्त खगोलिकी और रेडार।

अंतरिक्ष अन्वेषण के लिए, पिछले बीस साल में हुए विकास में सबसे अनोखी बात अंतरिक्ष अन्वेषियों का प्रयोग है। मनुष्य ने चन्द्रमा पर कदम रखा और वहां के पत्थर पृथ्वी पर लाया। यहां के वैज्ञानिकों ने उनकी पूरी जांच की और इससे कुछ जरूरी बातों का पता चला—जैसे चन्द्रमा की क्या आयु है? और यह कैसे बना? अब तक बिना आदमी के कई उपग्रह ग्रहों पर

भेजे गये हैं। इन उपग्रहों ने बहुत महत्वपूर्ण चित्र भेजे और वैज्ञानिक डेटा उपलब्ध कराया। पृथ्वी से छोड़ा गया मेरीनर उपग्रह मंगल ग्रह पर उतरा और वहां से उसने ऐसे चित्र भेजे जिससे वहां के पत्थर, रेगिस्तान और सूखी नदी के तल साफ दिखाई देते हैं। रूस की वेनेरा परियोजना ने बहुत अच्छे यंत्र शुक्र ग्रह पर उतारे। इससे शुक्र के घने वायुमंडल की जांच हुई। शुक्र की सतह पथरीली और उसका तापमान 480° सेल्सियस तक पाया गया। रेडार तकनीक के प्रयोग से शुक्र की सतह का नक्शा प्राप्त हुआ। घने वायुमंडल के कारण ये चित्र पहले नहीं मिलते थे। सबसे आश्चर्य की बात यह मालुम हुई कि शुक्र अपने अक्ष पर उलटी (दक्षिणावतः—clockwise) दिशा में, घूमता है। अमेरिका की वायजर परियोजना से हमें बृहस्पति के वायुमंडल के विषय में काफी ज्ञान प्राप्त हुआ है। निकट से ली गई फोटो से पता चलता है कि वायुमंडल बादामी, लाल और सफेद रंग के गैस से भरा है, जिसकी गति भंवरदार (swirling) और प्रक्षुब्ध (turbulent) है।

बृहस्पति के चार बड़े उपग्रह : यो, योरोपा, गैनीमीड एवं केलिस्टो हैं। इन्हें गैलीलियो ने खोजा था और इनको अब गैलीलियन उपग्रह कहते हैं। इन उपग्रहों का आकार बुध के बराबर है। इनमें आपस में काफी अन्तर है। ''यो'' की सतह चमकीली लाल, नारंगी और पीले रंग के गंधक और ज्वालामुखी से भरी है। ये ज्वालामुखी बृहस्पति के गुरुत्व बल से उत्पन्न होने वाले प्रतिबल के कारण हैं और ये सदा फटते रहते हैं।

''योरोपा'' की सतह चिकनी और चमकीली है तथा इसमें काले धब्बे और आड़ी-तिरछी (criss-crossed) रेखाएं हैं। ये शायद सतह के बर्फ में दरार पड़ने से हुई हैं।

''गैनीमीड'' की सतह चन्द्रमा की सतह की तरह ही क्रेटरों से भरी है।

लेकिन चन्द्रमा में धब्बे हैं जो बड़े-बड़े मैदान हैं। ये मैदान ज्वालामुखी के लावा के बहने और क्रेटरों के भरने से, लाखों वर्ष पहले बने। पर गैनीमीड पर ऐसा नहीं हुआ, बल्कि इस पर जहां कम क्रेटर हैं वहां हम एक हल्के रंग की सतह पाते हैं। इन स्थानों पर विचित्र खांचे हैं जो मोटे बर्फ की सतह के फटने से बने हैं।

"केलिस्टो" क्रेटरों से भरा है। वायजर-2 (voyager-2) ने मार्च 1972 में बृहस्पति और उसके उपग्रहों के 15000 चित्र पृथ्वी पर भेजे। वायजर-2 आगे बढ़ता गया और अगस्त 1981 में शनि के पास से गुजरा। इसने पृथ्वी पर कई सुन्दर चित्र भेजे जिससे रिंग की जटिल बनावट में नये पहलू दिखाई दिये। फिर ये यूरेनस की ओर बढ़ा और 1986 में वहां पहुंचा। यह आगे बढ़ते हुए 1989 में नेपच्यूनके पास से गुजरा। यह पूरी परियोजना तकनीकी की महान् सफलता का उदाहरण है।

कुछ वर्ष पहले यूरनेस और नेपच्यून में भी रिंग पाये गये। इस खोज में भारतीय वैज्ञानिकों का काम महत्वपूर्ण है, खासकर डा. जे.सी. भट्टाचार्या और उनके साथियों का।

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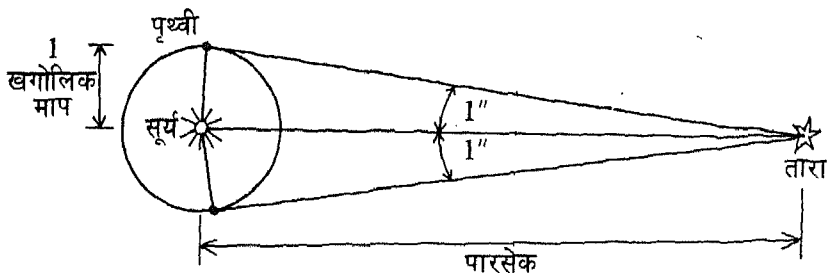
भाग—दो

तारे

7

तारों की दूरी

पृथ्वी के सूर्य के चारों ओर घूमने के कारण, नजदीक के तारे दूर के तारों के मुकाबले में अपना स्थान बदलते हुए दिखाई देते हैं। यह प्रभाव लंबन (parallax) के नाम से प्रसिद्ध है। इसको समझना बहुत कठिन है क्योंकि सभी तारे (सूर्य-पृथ्वी की दूरी के मुकाबले में) बहुत ज्यादा दूरी पर हैं। इसलिए तारों का लंबन मापने के लिए हमें उन कोणों में परिवर्तन मापना होगा जो नजदीक के तारे, दूर के तारों के साथ बनाते हैं। हम छोटे कोण का माप ''मिनट'' और ''सेकन्ड'' में अंकित करते हैं। 1 डिग्री का साठवां भाग (1/60), आर्क के 1 मिनट (1′) के बराबर होता है। यदि किसी तारे का लंबन अथवा एक साल में उसका स्थान कितने सेकन्ड से बदला, ज्ञात हो जाए तो उसकी पृथ्वी से दूरी आसानी से निकाली जा सकती है। यदि दूरी बहुत हो तो खगोलिक मात्रक (astronomical unit) (ए.यू.) प्रयोग होता है या फिर दूरी पारसेक (parsec) में बतायी जाती है। पृथ्वी से सूर्य की औसत

दूरी (जो 149,600,000 किलोमीटर है) को एक खगोलिक मात्रक कहते हैं और एक पारसेक वह दूरी है जिसमें एक खगोलिक मात्रक किसी दूर की

चित्र 26. **पारसेक**

वस्तु के साथ 1″ का कोण बनाते हैं। इसलिए एक तारा जो 1 पारसेक की दूरी पर है वह अपना आभासी स्थान एक वर्ष में 2″ से बदलेगा (चित्र 26)। एक पारसेक 266000 ए. यू. के बराबर है।

दूरी नापने के लिए एक और मात्रक है। इसमें वह दूरी ली जाती है जो प्रकाश की किरणें एक साल में तय करती हैं। इस दूरी को एक प्रकाश वर्ष कहते हैं। प्रकाश की गति एक सेकन्ड में 300,000 किलोमीटर है। एक प्रकाश वर्ष 9.46×10^{12} किलोमीटर या 63,240 ए.यू. या 0.3068 पारसेक होता है।

पृथ्वी के सबसे पास का तारा अल्फा-सेन्टॉउरी (alfa centaury) है। इसकी दूरी 1.3 पारसेक (करीब 4 प्रकाश वर्ष) है। सबसे पास के तारे से प्रकाश को पृथ्वी तक पहुंचने में 4 वर्ष लगते हैं। जबकि सूर्य से 8½ मिनट।

लंबन के उपयोग से केवल करीब के तारों की दूरी नापी जा सकती है। जो तारे 100 पारसेक से भी ज्यादा दूरी पर हैं उनकी दूरी लंबन से जानना कठिन है। इसलिए हमें कई नयी विधियों के बारे में जानना होगा।

स्पेक्ट्रोस्कोपी विज्ञान (अध्याय 9) में हम तारों से आये प्रकाश की जांच करते हैं। इससे हमें तारों का तापमान और उसके बाहरी हिस्सों का ज्ञान होता है। दो तारे जो एक ही तरह के हैं करीब-करीब बराबर रोशनी विकिरण करेंगे एवं उनकी ज्योति बराबर होगी। इसलिए यदि हम एक ही जैसे दो तारे देखें, जिसमें एक तारा इतना नजदीक हो कि लंबन तकनीक से उसकी दूरी पता चल जाये और दूसरा मंद दीप्ति का हो, तब हम मान सकते हैं कि दोनों बराबर ज्योति के हैं। दूसरा तारा मंद इसलिए दिखता है क्योंकि उसकी दूरी अधिक है। उनकी आभासी ज्योति की तुलना कर हम दूसरे तारे की दूरी का पता लगा सकते हैं। किसी तारे की दूरी का पता चलने पर हम उसकी ज्योति (यानि कितनी रोशनी उससे विकिरण होती है) का अनुमान लगा सकते हैं। सिरियस (sirius), सूर्य से 22 गुना ज्यादा ज्योति देता है, लेकिन कैनोपस (canopus) की तुलना में सिरियस की ज्योति 1/75000 ही है। इस प्रकार तारों में आपस में बहुत अंतर हो सकता है। सबसे दीप्तिमान तारा, सबसे मंद तारे की तुलना में 10^9 गुना प्रकाश फेंकता है।

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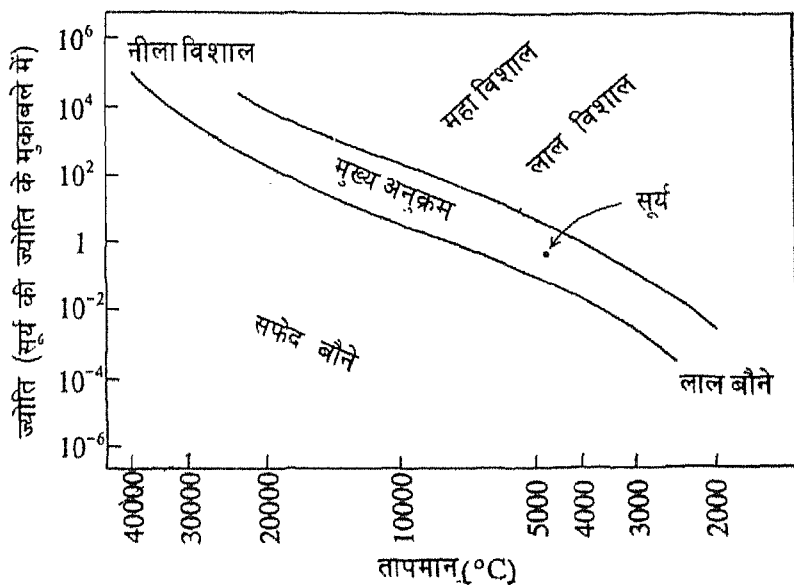
8

तारों के रंग

हम अपनी आंखों से भी देख सकते हैं कि तारों से आया प्रकाश केवल सफेद नहीं होता है। बेटेलगियूस, ओरियों तारामंडल का सबसे चमकीला तारा है और यह स्पष्ट रूप से लाल दिखाई देता है। छोटी दूरबीन से देखने पर भी तारों का रंग स्पष्ट हो जाता है। रंग द्वारा तारों की सतह के तापमान का पता चलता है। जब कभी हम किसी धातु के टुकड़े को गरम करते हैं तब उसके तापमान और रंग का संबंध देखते हैं। जब यह गर्म हो जाता है तो लाल दिखने लगता है। इससे भी अधिक गर्म होने पर नारंगी के रंग का हो जाता है और तापमान बढ़ाने पर यह पीला, और आगे सफेद हो जाता है। बहुत ही अधिक तापमान होने पर सफेद रंग, नीले रंग में बदल जाता है। ऐसे ही रंगों का परिसर (range) हम लोग तारों में भी देखते हैं। सावधानी से यदि हम तारों का रंग मापें तो उनकी सतह का तापमान ठीक मालुम हो जायेगा।

हर्ट्जस्प्रुंग (Hertz sprung) और रसेल (Russel) ने तापमान और

तारों के रंगों (ज्योति) में संबंध स्थापित किये। 1913 में रसेल ने एक आरेख प्रकाशित किया जिसमें उसने हज़ारों तारों का स्थान दिखाया (चित्र 27)। इस आरेख को एच-आर (HR) आरेख कहते हैं।

चित्र 27. हर्ट्ज़स्प्रुंग रसेल आरेख

सबसे विस्मयकारी बात इस एच-आर आरेख में यह है कि अधिकांश तारे ऐसे हैं कि वे विकर्ण पट्टी में पड़ते हैं। इस पट्टी को मुख्य अनुक्रम (main sequence) कहते हैं। ऊपर कोने पर बहुत ही गर्म नीले विशाल

और नीचे कोने पर धीमे लाल रंग के बौने तारे हैं। हमारा अपना सूर्य एक औसत तारा है और उसका स्थान मुख्य अनुक्रम के बीच में है। कुछ तारे अनोखे हैं। लाल विशाल (red giants) उतने गर्म नहीं हैं लेकिन काफी प्रकाश फेंकते हैं। इससे यह पता चलता है कि वे बहुत विशाल हैं। सबसे बड़ा तारा (अब तक के ज्ञान के आधार पर) अति विशाल ऐपसीलों ऑरीगे (apsilon aurigae) है। इसका व्यास सूर्य से 2000 गुना अधिक है—शनि की कक्षा के व्यास से भी बड़ा। लाल विशाल तारों का घनत्व काफी कम होता है। बेटेलगियूसस या ऐपसीलों ऑरीगे की गैस इतनी कम घनी है कि वह पृथ्वी पर लगे अनुसंधानशाला में उपलब्ध निर्वात से भी कम है। कुछ और अजीब तारे मुख्य अनुक्रम के बाहर हैं। ये हैं श्वेत बौने (white dwarf)। श्वेत बौने बहुत ही छोटे हैं लेकिन उनका घनत्व अपार है। उदाहरण के लिए सिरियस-बी (sirius B) जो आकाश में सबसे चमकीले तारे सिरियस-ए (sirius A) के चारों ओर घूमता है, यूरेनस के बराबर है और इतना घना है कि उसके एक घन सेन्टीमीटर का भार 36 किलोग्राम है।

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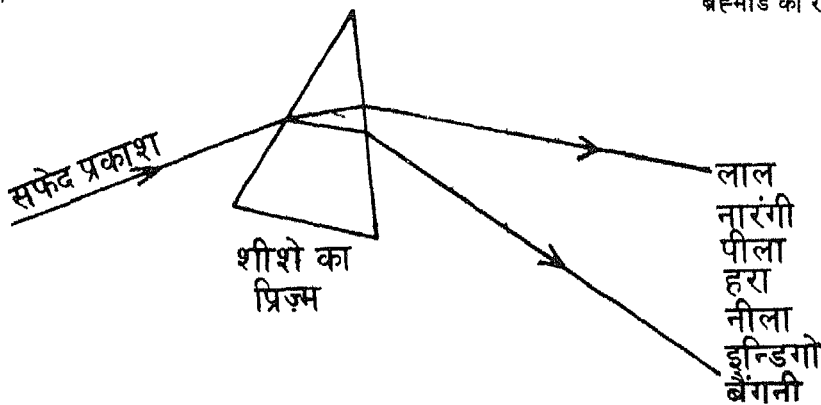
9

स्पेक्ट्रोस्कोपी

गति और गुरुत्व के नियमों के खोजकर्ता न्यूटन की खोज के अनुसार सफेद प्रकाश कई रंगों के प्रकाश से बना है। प्रिज़्म इस सफेद प्रकाश की किरणों को उनके रंग के घटकों में विभाजित कर देता है। (चित्र 28 देखिए) रंगों के परास को स्पेक्ट्रम (spectrum) कहते हैं और इसे हम इन्द्र धनुष (जो प्रिज़्म की तरह सूर्य किरण का पानी की बूंदों द्वारा विघटन होने से बनता है) में देखते हैं।

प्रकाश तरंग में चलता है और स्पेक्ट्रम के हर एक रंग की तरंग-दैर्ध्य अलग-अलग होती है। लंबी तरंग लाल रंग वाले सिरे की तरफ और छोटी तरंग बैंगनी रंग वाले सिरे की तरफ होती है। तापमान से संबंधित रंगों के परास को हम इस प्रकार समझ सकते हैं। एक गर्म वस्तु जैसे धातु का टुकड़ा या एक तारे की सतह, सभी तरंग दैर्ध्य के प्रकाश को विकिरण करती है। 5000^0 से 6000^0 सें. तापमान होने पर यह गर्म वस्तु पीले-सफेद रंग की

चित्र 28. **सफेद प्रकाश को प्रिज्म से भेजने पर स्पेक्ट्रम का बनना**

दिखाई देती है। इसका अर्थ है कि यह वस्तु सफेद पीले रंग का प्रकाश विकिरण कर रही है (सूर्य की सतह पर यही तापमान है)। इससे कम तापमान पर लम्बे तरंग दैर्ध्य का प्रकाश होता है इसलिए यह वस्तु लाल दिखाई देती है और अधिक तापमान पर छोटे तरंग दैर्ध्य का प्रकाश होता है इसलिए नीली दिखाई देती है।

जब तारों का प्रकाश प्रिज़्म से विभक्त हो कर रगीन स्पेक्ट्रम में बदल जाता है तो उसमें कुछ काली लकीरें भी दिखाई देती हैं। ये काली लकीरें सबसे पहले फ्रोनहॉफर द्वारा 1815 में सूर्य किरणों के स्पेक्ट्रम में देखी गयी थीं। ये सूर्य की बाहरी सतह में उपस्थित छोटे अणुओं और परमाणुओं के कारण बनती हैं। ये अणु और परमाणु कुछ निर्धारित आवृत्ति (frequency) की किरणों का अवशोषण (absorption) करते हैं। जिसके कारण इन तरंग दैर्ध्यों के संगत रंग काफी कम हो जाते हैं। इन रेखाओं को अवशोषण रेखाएं (absorption lines) कहते हैं।

अलग-अलग अवशोषण रेखाओं के सेट के लिए तारों के अपने

स्पेक्ट्रम होते हैं। खगोलज्ञ इन अवशोषण स्पेक्ट्रमों को वर्णमाला के अक्षरों द्वारा पुकारते हैं। ये किस प्रकार के हैं, यह उनके तापमान पर निर्भर करता है। यह नीचे सारणी में दिखाया गया है।

सारणी 1

अवशोषण स्पेक्ट्रम

तापमान (से.)	प्रकार	रंग
25,000-50,000	ओ (O)	नीला
11,000-25,000	बी (B)	नीला
7,500-11,000	ए (A)	नीला-सफेद
6,000- 7,000	एफ (F)	सफेद
5,000- 6,000	जी (G)	पीला-सफेद
3,500- 5,000	के (K)	लाल नारंगी
2,000- 3,500	एम (M)	लाल

मुख्य अनुक्रम में अधिकतर तारे 'बी' से 'एम' प्रकार के हैं। सूर्य 'जी' प्रकार का तारा है। तीन अन्य प्रकार के तारे भी हैं जो ठंडे हैं और 'एम' प्रकार से भी कम ज्योति के हैं। इनको 'आर और एस' प्रारूप दिया गया है। अधिक ज्योति और तापमान वाले 'ओ' प्रकार के तारे भी बहुत कम हैं। इन तारों के स्पेक्ट्रम में उत्सर्जन (emission) व अवशोषण से प्राप्त दोनों प्रकार की रेखाएँ हैं। इससे प्रतीत होता है कि ये तारे बहुत ही गर्म दीप्तिमान गैस के बादलों से ढके हैं। इन्हें वुल्फरायेत (wolf-rayet) तारे कहते हैं।

तारों की स्पेक्ट्रम रेखाओं से उनके तापमान और तत्व के ज्ञान के अतिरिक्त उनसे यह संकेत भी मिलता है कि ये तारे कितनी गति से हमसे दूर जा रहे हैं या हमारे निकट आ रहे हैं। यह डाप्लर प्रभाव (doppler effect) के कारण होता है। आपने देखा होगा कि यदि आप एक रेलवे प्लेटफार्म पर खड़े हों और एक गाड़ी सीटी बजाते हुए चली जाये तो सीटी की आवाज लगातार बदलती हुई सुनाई देती है। जब गाड़ी हमारी ओर आ रही होती है तो सीटी का तारत्व (pitch) ऊंचा और जब हमसे दूर जा रही होती है तो तारत्व नीचा होता है। वास्तव में ध्वनि, वायु में तरंग उत्पन्न होने से होती है जो सीटी बजाने से हवा में उसी तरह से फैलती है जैसे एक जलाशय में पत्थर फेंकने पर समय के साथ चारों ओर फैलती हुई तरंगें पैदा होती हैं। चूंकि सीटी गति में है इसलिए ध्वनि की तरंगें उसके सामने गुच्छित हो जाती हैं और उसके पीछे की ओर फैल जाती हैं। इससे यह ज्ञात होता है कि तारत्व में परिवर्तन होता है। प्रकाश के साथ भी यही होता है क्योंकि यह भी एक तरंग-गति है। प्रकाश की तरंग विद्युत-चुम्बकीय है और इसे हवा या किसी अन्य पदार्थ के माध्यम की आवश्यकता नहीं है। इसलिए उन तारों का, जो हमारी ओर बढ़ रहे हैं प्रकाश नीला (छोटी तरंग लम्बाई का) दिखाई देगा और तारे जो हमसे दूर जा रहे हैं उनका प्रकाश लाल दिखाई देगा (तरंग लम्बाई बढ़ जायेगी)। इस प्रभाव को हम आसानी से इसलिए देख सकते हैं क्योंकि तारे के स्पेक्ट्रम की अवशोषण रेखाएं लाल या नीले रंग की ओर स्थानान्तरित हो जायेंगी। इनका अपने मानक स्थान से कितना स्थानान्तरण हुआ, यह जानने से हम यह पता लगा सकते हैं कि तारा कितनी गति से हमसे दूर या हमारे निकट जा रहा है।

डाप्लर प्रभाव से हम यह भी पता लगा सकते हैं कि कोई तारा घूर्णन

कर रहा है या नहीं। यदि तारे का अक्ष हमारी तरफ नहीं है, तो घूर्णन से तारे की सतह का कुछ भाग हमारे तरफ आएगा और कुछ भाग हमसे दूर जायेगा। इसलिए लाल की तरफ स्थानान्तरित एवं नीले की तरफ स्थानान्तरित प्रकाश के मिश्रण से इस तारे का स्पेक्ट्रम बनेगा। इसका अर्थ है कि घूर्णन करने वाले तारों की अवशोषण रेखाऐं थोड़ी विस्तृत होंगी और इसलिए सुस्पष्ट भी नहीं होंगी।

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विद्युत चुम्बकीय स्पेक्ट्रम

प्रकाश तरंग की लम्बाई ऐंगस्ट्राम (angstrom) मात्रक में मापी जाती है। एक ऐंगस्ट्राम मात्रक (प्रतीक Å) एक सेंटीमीटर का दस करोड़वां भाग (10^{-8}cm) होता है यानी कि 1 Å = 10^{-8} सेन्टीमीटर। प्रकाश की वे तरंग दैर्ध्यें जो हमारी आंखें देख सकती हैं, वे 4000 Å (स्पेक्ट्रम का बैंगनी सिरा) से 7000 Å (स्पेक्ट्रम का लाल सिरा) तक होती हैं। इन तरंग लम्बाईयों का परास पूरे विद्युत चुम्बकीय स्पेक्ट्रम का बहुत ही छोटा भाग है। रेडियो तरंग की लम्बाई कई किलोमीटर होती है। दूसरी ओर गामा किरणें है जिनकी तरंग लम्बाई बहुत ही छोटी होती है (10^{-10} सेन्टीमीटर से 10^{-13} सेन्टीमीटर)। विद्युत चुम्बकीय स्पेक्ट्रम का परास चित्र 29 में दिखाया गया है।

खगोली वस्तुओं से आने वाला कुछ विकिरण हम तक नहीं पहुंच पाता है क्योंकि पृथ्वी का वायुमंडल इन तरंगों के लिए पारदर्शी (transparent)

नहीं है। यह चित्र 29 में दाहिनी ओर पट्टी में काले रंग में दिखाया गया है। इसमें दो खिड़कियां (सफेद जगह) हैं। पृथ्वी का वायुमंडल सफेद रोशनी और रेडियो तरंगों (छोटी लम्बाई) के लिए पारदर्शी है। यही वे दो खिड़कियां हैं जो विद्युत चुम्बकीय स्पेक्ट्रम में दिखाई देती हैं। पारंपरिक खगोलिक शास्त्र, दृश्य प्रकाश पर निर्भर था। इसी के द्वारा हम लोग खगोल की वस्तुओं को देखते हैं। इस शताब्दी में हमने दूसरी खिड़की का प्रयोग करके रेडियो खगोलिकता का विकास किया जिससे ब्रह्मांड के विषय में हमारे ज्ञान की और अभिवृद्धि हुई। मनुष्य के भेजे हुए उपग्रहों द्वारा अब हम ऐसी तरंगों का निरीक्षण कर सकते हैं जो पहले पृथ्वी के वायुमंडल के कारण उपलब्ध नहीं थीं। अवरक्त (infrared) और एक्सरे (x-ray) एस्ट्रोनोमी में नये अनुसंधान तकनीक आ जाने से, इनका प्रयोग बहुत तेजी से बढ़ रहा है।

चित्र 29. **विद्युतचुंबकीय स्पेक्ट्रम**

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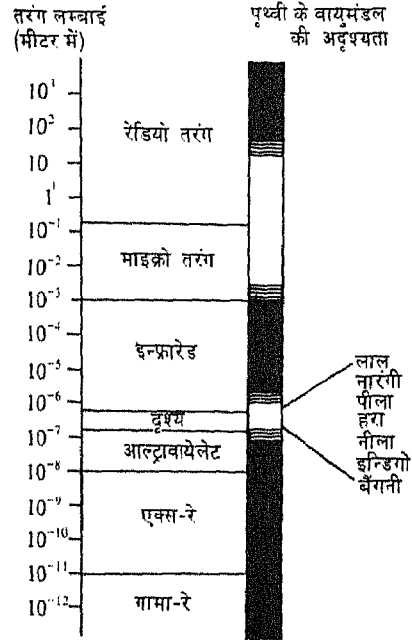
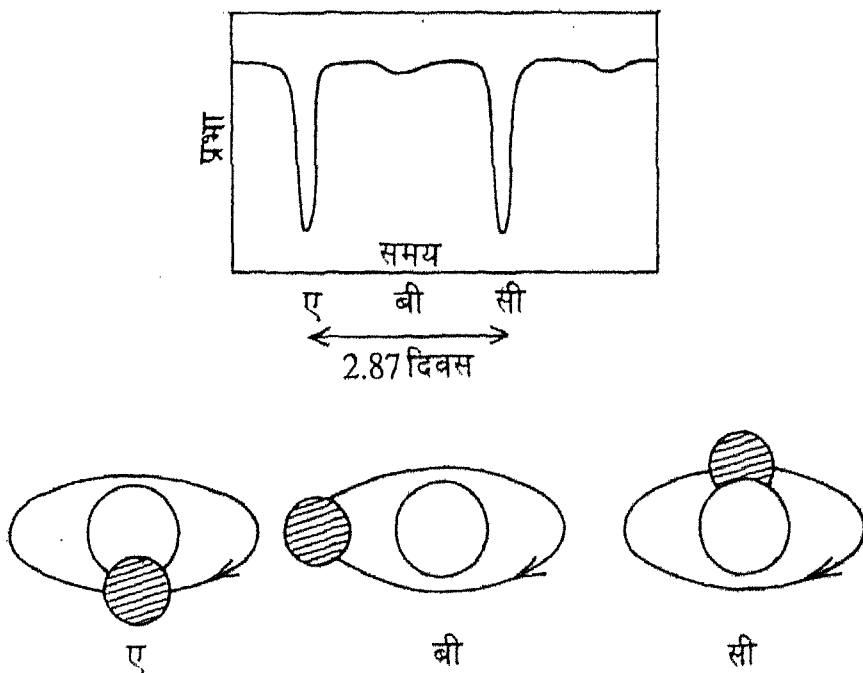

युग्मतारा

बहुत से तारे, जब दूरबीन से देखे जाते हैं तो वे अकेले नहीं परन्तु दो तारों के समूह के रूप में पाये जाते हैं जो एक दूसरे के चारों ओर घूमते दिखाई देते हैं। ऐसे ही दो तारों को युग्मतारा कहते हैं। ब्रह्मांड में ऐसे भी समूह हैं जिनमें तीन या अधिक तारे एक दूसरे के गुरुत्व आकर्षण में घूमते हैं। युग्मतारों द्वारा बहुत खास चीजों का पता चल सकता है इसलिए खगोलिक वैज्ञानिकों के लिए उनका विशेष स्थान है। उनकी गति और दूरी जानकर और न्यूटन के गुरुत्व नियम का प्रयोग करके हम उनके द्रव्यमान का परिकलन कर सकते हैं।

वह युग्मतारा जो दूरबीन की सहायता से दिखाई दे उसे प्रकाशीय युग्म (optical binary) कहते हैं। दूसरी युग्म प्रणालियां या तो हमसे बहुत दूर हैं या फिर उनमें दो तारे आपस में इतने करीब हैं कि वे बड़ी दूरबीन से भी एक प्रकाश बिन्दु जैसे ही दिखाई देते हैं। सौभाग्यवश कुछ दूसरे तरीके

भी हैं जिनसे यह पता चल जाता है कि जो हम देख रहे हैं वह युग्मतारा ही है या नहीं।

जब एक युग्मतारे का स्पेक्ट्रम ज़ांचा जाता है, तो यह पता चलता है कि दो स्पेक्ट्रम एक दूसरे के ऊपर अध्यारोपित (superimposed) हैं। यह इसलिए होता है क्योंकि दोनों तारे एक दूसरे के चारों ओर घूमते हैं और

चित्र 30. युग्मतारा ऑलगोल की प्रभा में विचरण

इसके फलस्वरूप जब एक तारा हमसे दूर जाता है तब दूसरा पास आता दिखाई देता है। कुछ समय बाद इसका उलटा होता है। इसीलिए दो स्पेक्ट्रम बनते हैं—एक लाल की तरफ और दूसरा नीले की तरफ स्थानान्तरित होते हुए। जैसे-जैसे ये तारे घूमेंगे, स्पेक्ट्रम की रेखाऐं आगे पीछे होंगी। ऐसी युग्म प्रणाली को स्पेक्ट्रोस्कोपी युग्म (spectroscopic binary) कहते हैं।

खगोल में एक चमकीला तारा ऑलगोल (algol) (अरबी में ऑलगोल का अर्थ राक्षस है) एक इकलिप्सींग (eclipsing) युग्मतारा है। इसमें घूमते हुए तारे, घूमते-घूमते एक दूसरे के सामने भी आ जाते हैं (जब पृथ्वी से देखा जाये)। जब दोनों तारे पृथ्वी के सम्मुख होते हैं तो उनसे आया प्रकाश करीब-करीब स्थिर होता है, लेकिन जब एक तारा दूसरे के सामने आ जाता है और पहले तारे का प्रकाश पृथ्वी तक नहीं पहुंच पाता है तो उनका प्रकाश थोड़ी देर के लिए कम हो जाता है (चित्र 30)।

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12

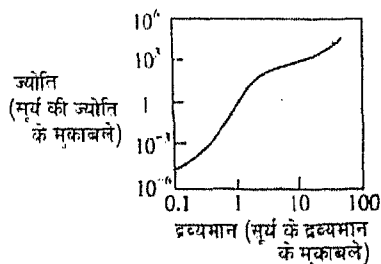
तारों का जन्म

एक तारे की जीवनी एक विशाल गैस और धूल के बादल से शुरू होती है। इस अवस्था में इसे निहारिका (nebula) कहते हैं। ओरीयो में एक बड़ी निहारिका, एक रोमांचक उदाहरण है। यह 100 प्रकाश-वर्ष विस्तृत है और इसमें बहुत से नये तारे हैं और बहुत से ऐसे तारे हैं जिनका निर्माण हो रहा है। एक दूसरा उदाहरण, उस दीप्तिमान क्षेत्र का है जिसमें प्लयोडिज (pleaides) के तारे अंतः स्थापित हैं। यह बहुत आसानी से, बिना दूरबीन के देखा जा सकता है।

निहारिका अधिकतर हाइड्रोजन गैस की बनी होती है यानी उसमें मौजूद गैसों में हाइड्रोजन गैस की मात्रा सबसे अधिक होती है। निहारिका के पदार्थ भंवरात्मक और प्रक्षुब्ध गति से ऐसे क्षेत्र बनाते हैं जहां घनत्व थोड़ा अधिक होता है। सघन क्षेत्र अगर बहुत बड़े और घने हों तो गुरुत्व आकर्षण के कारण संकुचित होंगे और इसके फलस्वरूप और अधिक घने होते

जायेंगे। इस तरह एक ऐसा क्षेत्र बन जाता है जहाँ पदार्थ संकुचित होते जाते हैं और आकर्षण से गोलाकार बनते जाते हैं। इसके साथ ही साथ तापमान और दाब भी बढ़ जाता है। जब तापमान और दाब इस क्षेत्र के बीच बहुत ऊंचा हो जाता है तब नाभिकीय (nuclear) अभिक्रिया आरम्भ हो जाती है। इसमें हाइड्रोजन नाभिक (hydrogen nucleus) एक दूसरे से टकराते हैं और हीलियम नाभिक बन जाते हैं। इस प्रक्रम में गर्मी और प्रकाश के रूप में ऊर्जा उत्पन्न होती है। इस अग्नि बॉल का निपात उस समय रुकता है जब केन्द्रीय क्षेत्र से निकलते प्रकाश और ताप का दाब, गैस के दाब के साथ, गुरुत्व आकर्षण शक्ति के बराबर हो जाता है। इस अवस्था में गैस का बॉल, ताप और प्रकाश से चमकता हुआ तारा बन जाता है।

आधुनिक खगोल भौतिक विज्ञान को सर ए.एस. ऐडिंगटन (1882-1944) ने शुरू किया। उन्होंने यह महसूस किया कि वह साधारण चित्र जिसमें एक तारा (जो गैस का बॉल है) अपने द्रव्यमान के बल के कारण निपातित नहीं होता और अपने गर्म अंतरंग के विकिरण दाब से रुका रहता है, यह गणित की सहायता से जांचा जा सकता है और किस प्रकार केन्द्र से सतह का तापमान, दाब और घनत्व बदलते हैं इसकी जानकारी हमें मिल सकती है। इसके परिकलन के लिए तारे की अंतरंग अवस्था के विषय में जानकारी होना आवश्यक है। उदाहरण के लिए, चूंकि तारा पारदर्शी नहीं है, इसलिए उसके केन्द्र से ताप या प्रकाश को सतह तक जाने में काफी समय लगेगा क्योंकि रास्ते में उनकी गैस के साथ पारस्परिक क्रिया होती है। किस गति से ताप और प्रकाश सतह पर पहुंचते हैं, यह तारे के पदार्थ की अपारदर्शिता पर निर्भर करता है। अगर संवहन (convection) हो तो एक दूसरी जटिलता उत्पन्न हो जाती है। वह यह कि अगर तारे के अंदर गैस की लहरें चलती हैं तो ये लहरें ऊर्जा को गर्म केन्द्र से ठंडी सतह तक शीघ्र ले जा

सकती हैं। इन सभी प्रश्नों का ऐडिन्गटन ने गहराई से अध्ययन किया और अपनी पुस्तक "तारों की आंतरिक रचना" (1919) में छापा। बाद में कई वैज्ञानिकों ने इन प्रश्नों का अन्वेषण किया। सबसे बड़ा अन्वेषण भारतीय खगोलिक वैज्ञानिक सुब्रमनियम चन्द्रशेखर (1910) ने किया। उनका महान काम उनकी पुस्तक "तारों की संरचना" (1939) में प्रकाशित है।

चित्र 31. **मुख्य अनुक्रम में तारों के द्रव्यमान-ज्योति का संबंध**

इस अन्वेषण का एक साधारण परिणाम सूर्य के केन्द्र में तापमान, दाब और घनत्व की जानकारी प्राप्त करना है। सूर्य की त्रिज्या (7×10^5 किलोमीटर), द्रव्यमान (2×10^{30} किलोग्राम) और सतह का तापमान (6000° सेल्सियस)। तापमान परिकलन करने से पता चलता है कि सूर्य के केन्द्र का तापमान एक करोड़ डिग्री सेल्सियस (10^7 डिग्री सेल्सियस) होगा। इसका आंतरिक घनत्व जल से 150 गुना है और दाब पृथ्वी के वायुमंडल से एक करोड़ गुना है।

ऐडिन्गटन ने एक नियम प्रस्तावित किया जो एक तारे के द्रव्यमान और ज्योति से संबंध रखता है। इस नियम के अनुसार मुख्य अनुक्रम के तारों की ज्योति उनके द्रव्यमान से निश्चित होती है, इसलिए इस अनुक्रम के दो तारे जिनका द्रव्यमान बराबर है, बराबर ऊर्जा विकिरण करेंगे (चित्र: 31)। मुख्य अनुक्रम के तारे, जिनका द्रव्यमान और ज्योति ज्ञात है, ऐडिन्गटन के सूत्र से सहमत हैं।

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एक तारे का जीवन

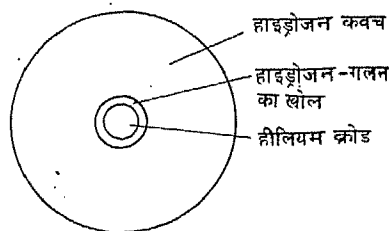
पिछले अध्याय में हमने देखा है कि एक तारा गैस के एक बादल के निपात (collapse) से बनता है जो कि तब तक गर्म और घना होता जाता है जब तक नाभिकीय क्रिया शुरू नहीं हो जाती। लेकिन अगर तारे का द्रव्यमान सूर्य के 1/10 द्रव्यमान से भी कम है तो उसके केन्द्रीय क्षेत्र का तापमान और दाब कभी इतने ऊंचे नहीं होंगे कि नाभिकीय अभिक्रिया शुरू हो सके। इन छोटे तारों की सतह का तापमान 2500^0 से. से अधिक नहीं हो पाता है और इनकी ऊर्जा का स्रोत संकुचन (contraction) होने से पैदा होने वाली ऊर्जा है। इन्हें लाल बौने (red dwarfs) कहते हैं। ये टाइप 'आर', 'एन' और 'एस' के तारे हैं और हट्जस्प्रुंग-रसेल आरेख में नीचे दाहिनी ओर इनका स्थान है। ये धीरे-धीरे ठंडे होते हैं और जीवन समाप्त होने पर घनी, छोटी और ठंडी वस्तु की भांति हो जाते हैं।

इनसे बड़े तारे अपने केन्द्रीय क्षेत्र में काफी मात्रा में तापमान और दाब

पैदा करते हैं जिससे हाइड्रोजन संगलन (fusion) क्रिया शुरू हो जाती है (वास्तव में संगलन अभिक्रिया जटिल है और कई चरणों में पूरी होती है)। सरलता के लिए यहां साधारण रूप से समझाया गया है। अध्याय 15 में इसके कुछ चरण विस्तार में दिखाये गये हैं। संगलन अभिक्रिया में प्रोटॉन (हाइड्रोजन का नाभिक) एक दूसरे के साथ तेजी से टकराते हैं जिससे वे जुट कर हीलियम नाभिक बन जाते हैं। जब यह स्थिति पैदा हो जाती है तब तारा मुख्य अनुक्रम का तारा हो जाता है और बहुत लम्बे समय तक ताप और प्रकाश का विकिरण करता है। सूर्य के जैसा एक तारा मुख्य अनुक्रम में हाइड्रोजन संगलन क्रिया की अवस्था में 10^{10} (हज़ार करोड़) वर्ष तक रहता है। इससे अधिक द्रव्यमान के तारे शीघ्र ही अपना हाइड्रोजन जला देते हैं। वह तारा जिसका द्रव्यमान सूर्य से पन्द्रह गुना हो वह इस अवस्था में केवल एक करोड़ (10^7) वर्ष तक रह सकता है। जब तक तारा मुख्य अनुक्रम में रहता है तब तक उसका तापमान या प्रकाश नहीं बदलता।

हट्जस्प्रुंग-रसेल आरेख की मुख्य-अनुक्रम पट्टी इसलिए प्रमुख है क्योंकि तारे अपनी अधिकतम जीवनी इसी अवस्था में बिताते हैं। इस अवस्था में तारे में अधिकतम पदार्थ हाइड्रोजन होता है जो कि केन्द्रीय भाग में हीलियम में बदलता रहता है। अंत में तारे का क्रोड (core) हीलियम का हो जाता है। जिसके चारों ओर हाइड्रोजन का कवच रहता है। इस कवच में भी हाइड्रोजन हीलियम में बदलता रहता है।

जब हीलियम क्रोड बन जाता है तो उसके बाद बहुत सी क्रियाएं तेजी से होती हैं और तारा मुख्य अनुक्रम से अलग हो जाता है। जला हुआ क्रोड विकिरण करना बंद कर देता है जिसके फलस्वरूप विकिरण दाब कम हो जाता है। चूंकि यह विकिरण दाब तारे को सहारा देता है अतः इसके कम हो

जाने से गुरुत्व निपात को रोकने का अब कोई साधन नहीं रह जाता और क्रोड का संकुचन होने लगता है। संकुचन से ताप फिर बढ़ता है। बढ़ते हुए तापमान से कवच के हाइड्रोजन का जलना और तेज हो जाता है। इससे विकिरण दाब बढ़ जाता है और वह हाइड्रोजन कवच को बाहर की ओर ढकेलता है। इससे आवरण का प्रसार होता है और प्रसार के साथ ताप कम

चित्र 32.

होता है। इस प्रकार तारा बड़ा और ठंडा होता जाता है। अतः यह तारा अब लाल विशाल की ओर प्रगति कर रहा है और इसका क्रोड घना और गर्म हो रहा है। जलने वाले हाइड्रोजन कवच से और हाइड्रोजन क्रोड में आ जाता है।

इसके आगे क्या होगा यह तारे के द्रव्यमान पर निर्भर करता है। लाल विशाल (जिसका द्रव्यमान लगभग सूर्य के द्रव्यमान के बराबर है) में क्रोड का निपात कुछ समय बाद बंद हो जायेगा। इसका कारण अब हम बताते हैं। हीलियम क्रोड को हम इलेक्ट्रानों का सागर समझ सकते हैं जिसमें हीलियम की नाभिकियां तैर रही हैं। जब घनत्व बहुत बढ़ जाता है और इलेक्ट्रान सागर का घनत्व और नहीं बढ़ सकता है तो इस अवस्था में क्रोड असंपीड्य (incompressible) हो जाता है। ऐसे क्रोड के पदार्थ को अपभ्रष्ट (degenerate) कहते हैं। जब ऐसी अवस्था आ जाती है तब क्रोड का संकुचन रुक जाता है। परिकलन करने से पता चला है कि इस समय लाल

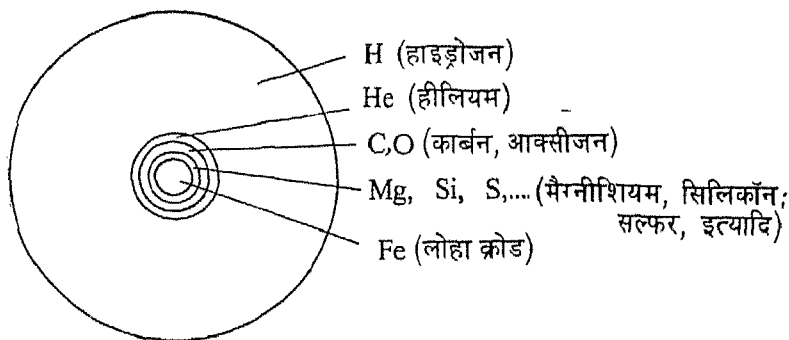
विशाल के क्रोड के बाहरी अवरण की गैस प्रक्षुब्ध हो जाती है और अन्दर चलने वाली संवहन धारायें (convection current), जलने वाले हाइड्रोजन कवच से ऊर्जा को सतह पर ले जाती हैं। इससे लाल विशाल तारों की ज्योति और बढ़ जाती है। इनका आकार भी बढ़ता है। यदि किसी तारे का द्रव्यमान सूर्य के 4/10वें द्रव्यमान से कम हो तो उसकी हाइड्रोजन गैस के जलकर समाप्त होते ही उस तारे का निपात हो जायेगा और यह एक सफेद बौना बन जायेगा।

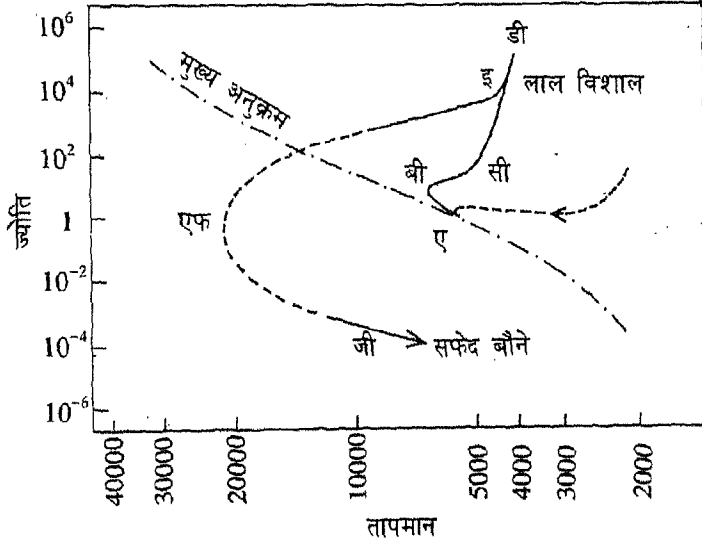
सफेद बौना एक बहुत ही छोटा तारा है जिसका आमाप (size) पृथ्वी के बराबर होता है। इसके पदार्थ अपभ्रष्ट बहुत ही उच्च घनत्व (पानी के घनत्व के करोड़ गुना) के होते हैं। यह तारा साधारण (अभ्रष्ट) गैस के एक पतले आवरण से ढका रहता है।

यदि लाल विशाल तारे का द्रव्यमान सूर्य के बराबर हो तो उसके अपभ्रष्ट क्रोड का तापमान 10^8 डिग्री सेल्सियस तक हो सकता है और इस अवस्था में एक नयी नाभिकीय क्रिया आरम्भ हो सकती है जिसमें हीलियम नाभिक एक दूसरे से मिलकर कार्बन नाभिक बना सकते हैं। इस क्रिया को हीलियम ज्वलन (helium burning) कहते हैं। यदि क्रोड में साधारण हीलियम गैस होती तो जलने से पैदा होने वाली गर्मी के कारण गैस का प्रसार होता, प्रसार से तापमान में गिरावट आती, और हीलियम का जलना स्थायी और नियंत्रित गति से होता। लेकिन क्रोडमें हीलियम साधारण गैस के रूप में नहीं है, बल्कि यह अपभ्रष्ट गैस है इसलिए इसका प्रसार नहीं होता है। इसकी गर्मी बढ़ती जाती है और हीलियम का जलना तेज होता जाता है। यह क्रिया उस स्थिति तक चलती है जब तक अपभ्रष्टता बनी रहती है। उसके बाद एकाएक अपभ्रष्टता समाप्त हो जाती है। क्रोड में यह एक साधारण

हीलियम गैस बन जाती है जिसका तापमान और दाब बहुत ही ऊंचा होता है। इस समय इसका भयंकर प्रसार होता है। इसको हीलियम दमक (helium flash) कहते हैं। जलते हुए हाइड्रोजन कवच के अचानक प्रसार से इसके तापमान में कमी होती है और इससे हाइड्रोजन का जलना काफी धीमा हो जाता है। अब यह तारा एक नयी स्थिति में आ जाता है जिसमें मुख्य ऊर्जा पैदा करने वाली क्रिया हीलियम ज्वलन है। इस स्थिति में विकिरण दाब, हाइड्रोजन ज्वलन की अवस्था के विकिरण दाब से कम होता है और बाहरी कवच सिकुड़ने लगता है। जैसे-जैसे यह सिकुड़ता है, सतह का तापमान बढ़ता है। अंत में, जब पूरा हीलियम जल जाता है तब तारे का निपात होता है और यह सफेद बौना बन जाता है।

लाल विशाल तारों में, जिसका द्रव्यमान सूर्य से अधिक है, हीलियम का जलना क्रोड के अपभ्रष्ट होने से पहले ही शुरू हो जाता है इसलिए इनमें हीलियम दमक नहीं देखी जाती। हीलियम के स्थायी रूप से जलने से कार्बन क्रोड बनता है, जिसका संकुचन होता है। संकुचन के होने से लाल विशाल का खोल (envelop) प्रक्षुब्ध हो जाता है। यदि तारे का द्रव्यमान बहुत अधिक नहीं है (यानि इसका द्रव्यमान 1.1 और 1.5 गुना सूर्य के द्रव्यमान के बीच है) तो विकिरण दाब और खोल की प्रक्षुब्धता के कारण लाल विशाल का खोल अलग होकर आकाश में दूर चला जाता है। इस तरह ग्रह निहारिकाओं (planetary nebulae) की उत्पत्ति होती है। ग्रह निहारिका दीप्तिमान गैस का विशाल खोल है जिसका विस्तार कई प्रकाश वर्ष है और जिसके केन्द्र में एक तारा होता है। फोटो में ग्रह निहारिका धूम्र-वलय (smoke ring) जैसी दिखायी देती है। लेकिन यह एक भ्रम है—वास्तव में गैसें तारे को परिबद्ध करती हैं। ग्रह निहारिका का यह केन्द्रीय तारा, लाल

विशाल के बीच का भाग है जिसके खोल का ज्यादातर भाग खत्म हो गया है। ऐसे तारों की सतह का तापमान काफी ऊंचा रहता है ($50,000^0$ से. से $100,000^0$ से. तक)। जब इनका संकुचन होता है और इनका तापमान कम हो जाता है तब ये सफेद बौने बन जाते हैं।

चित्र 33. **अति विकसित अति द्रव्यमान तारा**

यदि किसी तारे का द्रव्यमान सूर्य से बहुत अधिक है, तब यह विकास के कई चरणों से गुज़रेगा। ये चरण इस प्रकार हैं : हाइड्रोजन ज्वलन का चरण, हीलियम ज्वलन का चरण, कार्बन ज्वलन का चरण, इत्यादि (अगला अध्याय देखें)। प्रत्येक चरण में पिछले चरण के मुकाबले भारी नाभिक (nuclei) बनते हैं। इस प्रकार लाल विशाल (या अति विशाल) तारों का क्रोड प्याज की तरह परतदार और जटिल होता है। सबसे भारी नाभिक जो संगलन अभिक्रिया द्वारा लाल विशाल के क्रोड में बन सकता है वह लौह-धातु का नाभिक है। वे तारे जो सूर्य से दस गुना या अधिक द्रव्यमान के हैं, उनके क्रोड में लोहा उनकी अंतिम लाल विशाल अवस्था में बनता है।

चित्र 34. **एक सूर्य के द्रव्यमान के बराबर के तारे का विकास**
ए. हाइड्रोजन के जलने का आरंभ, एच.आर. आरेख में इसका स्थान
बी. हीलियम क्रोड का बनना सी. क्रोड का अपभ्रष्ट होना
डी. हीलियम फ्लैश इ. हीलियम का स्थिर रूप से जलना
एफ. कार्बन क्रोड का बनना जी. क्रोड का अपभ्रष्ट होना

चित्र 34 में सूर्य के द्रव्यमान के बराबर द्रव्यमान वाले तारे का विकास पथ एस-आर आरेख में दिखाया गया है।

□□

14

संगलन अभिक्रिया

इस अध्याय में हम, तारों के अन्दर होने वाली नाभिकीय अभिक्रियाओं का विस्तार पूर्वक वर्णन करेंगे। एक परमाणु का नाभिक प्रोटानों और न्यूट्रानों से बनता है। यदि हम प्रत्येक न्यूट्रान एवं प्रोटान का अलग-अलग द्रव्यमान लेकर कुल उपस्थित न्यूट्रानों एवं प्रोटानों के द्रव्यमान का योग निकालें तो हम यह पाते हैं कि नाभिक का द्रव्यमान इस योग से कम होता है। इस द्रव्यमान की कमी का संबंध बंधन-ऊर्जा (Binding Energy) से है। इसी ऊर्जा के कारण नाभिक बंधा रहता है। प्रोटान (p) का विद्युत चार्ज धनात्मक (positive) और न्यूट्रान (n) का उदासीन (neutral) होता है। दोनों का द्रव्यमान तकरीबन बराबर है परन्तु न्यूट्रान थोड़ा भारी है। न्यूट्रान के क्षय होने से प्रोटान, इलेक्ट्रान (e^-) और ऐन्टी-न्यूट्रीनो ($\bar{\nu}$) बनते हैं। इलेक्ट्रान का चार्ज ऋणात्मक (negative) है और इसका द्रव्यमान प्रोटान के द्रव्यमान का लगभग 1/2000 वां है। ऐन्टी-न्यूट्रीनो उदासीन है और

इसका द्रव्यमान शून्य के सन्निकट है। इस क्षय अभिक्रिया को हम इस प्रकार समझ सकते हैं :

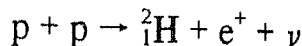
$$n \rightarrow p + e^{-} + \nu$$

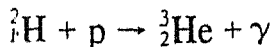
एक स्थायी नाभिक में न्यूट्रान का क्षय नहीं होता है क्योंकि अगर हम न्यूट्रान की जगह प्रोटान लेते हैं तो उस नाभिक का द्रव्यमान थोड़ा बढ़ जाएगा और इस बढ़े द्रव्यमान की शून्य से सृष्टि नहीं हो सकती। दूसरे शब्दों में बंधन-ऊर्जा स्थायी नाभिक में न्यूट्रान का क्षय रोकती है। वैसे कुछ नाभिक स्थायी नहीं होते हैं। जब ऐसे किसी अस्थायी नाभिक में एक न्यूट्रान प्रोटान में बदल जाता है (जैसा ऊपर दिखाया गया है) तो इसे नाभिक का बीटा-क्षय (beta decay) कहते हैं।

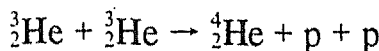
हाइड्रोजन के नाभिक में केवल एक प्रोटान होता है। ड्यूटेरियम, हाइड्रोजन का आइसोटोप (isotope) है और इसका नाभिक एक प्रोटान और एक न्यूट्रान से बना है। साधारण हीलियम के नाभिक में दो न्यूट्रान और दो प्रोटान होते हैं। इसका प्रतीक $^{4}_{2}He$ है। इस प्रतीक में ऊपर वाली संख्या नाभिक में कुल प्रोटान और न्यूट्रान की संख्या और नीचे वाली संख्या केवल प्रोटान की संख्या दर्शाती है। केवल प्रोटान की संख्या परमाणु संख्या (Atomic number) बताती है। नाभिक $^{4}_{2}He$ को ऐल्फा-कण भी कहते हैं। ऐल्फा-कण को बताने के लिए हम प्रतीक 'α' का प्रयोग करते हैं। हीलियम का एक आइसोटोप भी है जिसमें एक न्यूट्रान और प्रोटान होता है। इसे $^{3}_{2}He$ (हीलियम 3) भी कहते हैं।

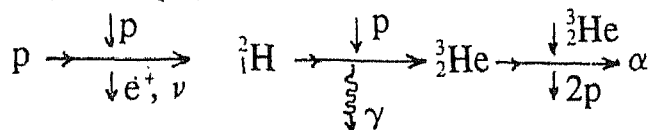
तारों में हाइड्रोजन ज्वलन, एक संगलन अभिक्रिया है जिसमें प्रोटान एक दूसरे से टकराते हैं और एल्फा-कण और विकिरण उत्पन्न होता है। ये अभिक्रिया तीन चरणों में पूरी होती है, जिसे pp[1] चेन कहते हैं। पहले दो

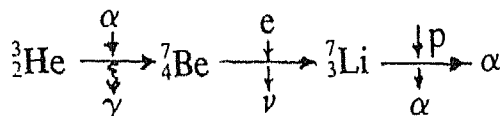
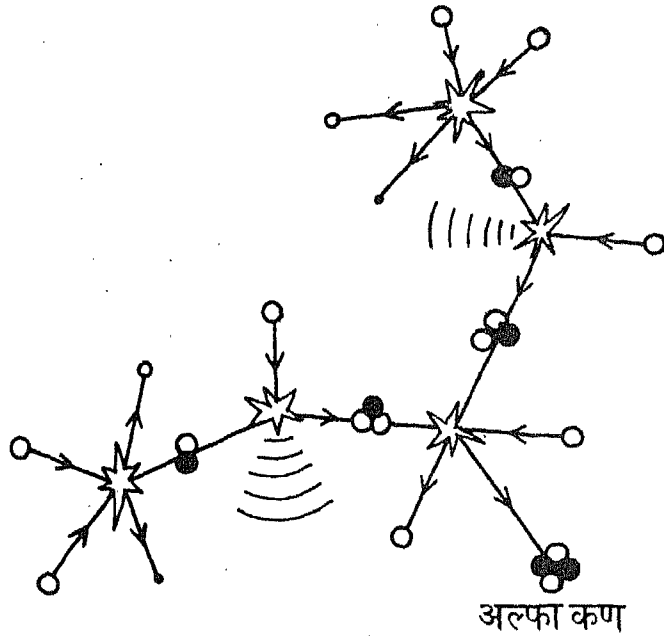
प्रोट्रान आपस में टकराकर ड्यूटेरियम का नाभिक, पाजिट्रान और न्यूट्रीनो बनाते हैं।

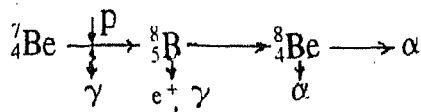
$$p + p \rightarrow {}^{2}_{1}H + e^{+} + \nu$$

इसके बाद डयूटरान तीसरे प्रोटान से टकराता है। इसे ${}^{3}_{2}He$ बनता है।

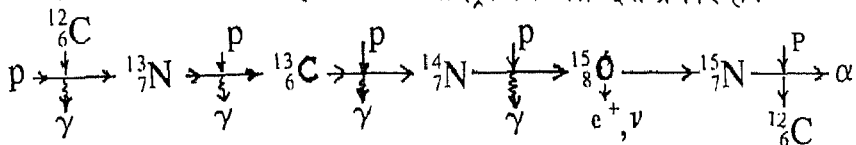
$${}^{2}_{1}H + p \rightarrow {}^{3}_{2}He + \gamma$$

यहां γ फोटान (photon) या विद्युत चुम्बकीय विकिरण का प्रतीक है। इस क्रिया में जो फोटान पैदा होते हैं उन्हीं से तारों में प्रकाश और गर्मी आती है। तीसरे चरण में दो ${}^{3}_{2}He$ टकराकर ऐल्फा-कण बनाते हैं।

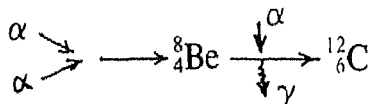
$${}^{3}_{2}He + {}^{3}_{2}He \rightarrow {}^{4}_{2}He + p + p$$

इस pp^1 शृंखला में होने वाली पारस्परिक क्रियाओं का अनुक्रम नीचे दिये आरेख से और भी स्पष्ट होगा:

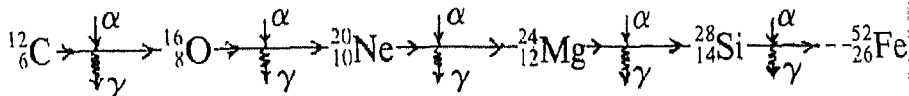
$$p \xrightarrow[\downarrow e^{+},\ \nu]{\downarrow p} {}^{2}_{1}H \xrightarrow[\downarrow \gamma]{\downarrow p} {}^{3}_{2}He \xrightarrow[\downarrow 2p]{\downarrow {}^{3}_{2}He} \alpha$$

एक दूसरी, मगर थोड़ी जटिल विधि द्वारा भी हाइड्रोजन से हीलियम बन सकता है। इसे pp^2 शृंखला कहते हैं। यह pp^1 की तरह होती है लेकिन बाद में अनुक्रम दूसरा हो जाता है। यह अनुक्रम इस प्रकार है

$${}^{3}_{2}He \xrightarrow[\downarrow \gamma]{\alpha \downarrow} {}^{7}_{4}Be \xrightarrow[\downarrow \nu]{e \downarrow} {}^{7}_{3}Li \xrightarrow[\downarrow \alpha]{\downarrow p} \alpha$$

pp^2 शृंखला के पहले चरण में एक बार बेरिलियम ${}^{7}_{4}Be$ के बन जाने पर (जैसा ऊपर दिखाया गया है), हीलियम एक नयी शृंखला pp^3 से बन सकता है :

चित्र 35. **pp[1]श्रृंखला— ऐल्फा कण का प्रोटान के टक्कर से बनना**

$$ {}^{7}_{4}Be \xrightarrow[\gamma]{p} {}^{8}_{5}B \xrightarrow[e^+,\ \gamma]{} {}^{8}_{4}Be \xrightarrow[\alpha]{} \alpha $$

हाइड्रोजन ज्वलन में कार्बन-नाइट्रोजन चक्र (CN cycle) का भी कुछ महत्व है। लेकिन यह CN चक्र तभी मुमकिन है जब कुछ कार्बन नाभिक उपलब्ध हों। इस अभिक्रिया में कार्बन नाभिक खत्म नहीं होते बल्कि ये उत्प्रेरक का काम करते हैं। कार्बन नाइट्रोजन चक्र इस प्रकार है :

$$ p \xrightarrow[\gamma]{{}^{12}_{6}C} {}^{13}_{7}N \xrightarrow[\gamma]{p} {}^{13}_{6}C \xrightarrow[\gamma]{p} {}^{14}_{7}N \xrightarrow[\gamma]{p} {}^{15}_{8}O \xrightarrow[e^+,\ \nu]{} {}^{15}_{7}N \xrightarrow[{}^{12}_{6}C]{P} \alpha $$

हीलियम ज्वलन में तीन ऐल्फा-कण जुट कर कार्बन नाभिक बनाते हैं। यह दो चरणों की अभिक्रिया है जिसमें, पहले दो अल्फा-कण मिलकर बेरिलियम नाभिक (जो स्थायी नहीं है) बनाते हैं जो एक अल्फा-कण का अवशोषण करके कार्बन नाभिक बन जाता है।

$$ \alpha + \alpha \longrightarrow {}^{8}_{4}Be \xrightarrow[\gamma]{\alpha} {}^{12}_{6}C $$

संगलन अभिक्रियाऐं जिनमें भारी नाभिक तारों के विकास के अंतिम चरण में बनते हैं, मुख्य रूप से ऐल्फा-कणों का नाभिकों द्वारा अवशोषण है–

$$ {}^{12}_{6}C \xrightarrow[\gamma]{\alpha} {}^{16}_{8}O \xrightarrow[\gamma]{\alpha} {}^{20}_{10}Ne \xrightarrow[\gamma]{\alpha} {}^{24}_{12}Mg \xrightarrow[\gamma]{\alpha} {}^{28}_{14}Si \xrightarrow[\gamma]{\alpha} \cdots {}^{52}_{26}Fe $$

यह शृंखला ${}^{52}_{26}Fe$ के आगे नहीं बढ़ सकती क्योंकि ऐल्फा-कण और ${}^{52}_{26}Fe$ के द्रव्यमानों को मिलाकर प्राप्त द्रव्यमान ${}^{56}_{28}Ni$ के द्रव्यमान से कम है

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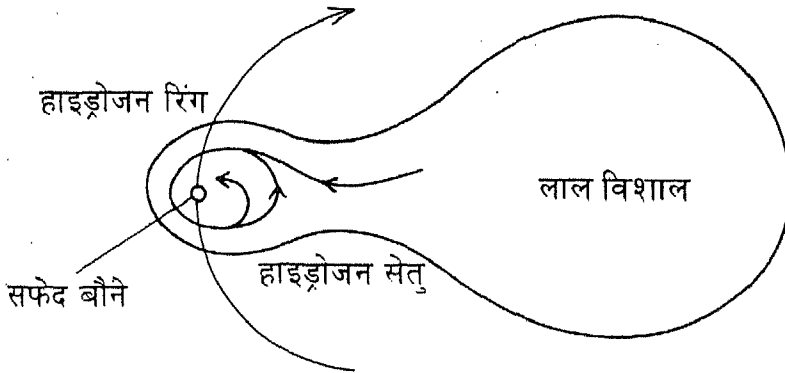
विस्फोटी तारा

कभी-कभी ऐसा होता है कि किसी तारे की ज्योति अचानक बढ़ जाती है। एक दो दिन के अन्दर उसका प्रकाश 10,000 या 100,000 गुना बढ़ जाता है। प्राचीन समय में भी ऐसी परिघटना देखी गयी थी। जब भी ऐसी घटना होती है तो ऐसा लगता है कि एक नया तारा आकाश में उदय हो गया है। इसलिए इसका नाम "नोवा" (लैटिन में "नया") पड़ा। लेकिन नोवा कोई नया तारा नहीं होता है, बल्कि वह तारा जिसकी ज्योति इतनी कम थी कि पहले दिखाई नहीं दिया किन्तु अचानक ज्योति बढ़ने से दिखायी पड़ने लगा, नोवा कहलाता है। हाल ही में एक नोवा सिग्नस तारामंडल (Cygnus Constellation) में अगस्त 1975 में देखा गया और दूसरा 1987 में।

अचानक प्रकाश बढ़ने के बाद नोवा धीमे पड़ जाते हैं और कुछ सप्ताह में अपनी मानक ज्योति पर पहुँच जाते हैं। कुछ नोवा तो चंद ही दिनों में इस स्थिति में पहुँच जाते हैं और कुछ कई वर्षों में।

नोवा का स्पेक्ट्रम, इसकी चमत्कारी अवस्था में, नीले की ओर विस्थापित होता है जैसा कि विस्फोट के बाद गैस का तीव्र गति से विस्तार होने पर होना भी चाहिए।

यह पाया गया है कि नोवा का विस्फोट संवृत युग्मतारे में होता है। इसलिए अब इस विषय में सोचना जरूरी है कि जब दो तारे एक दूसरे के चारों ओर एक दूसरे के निकट घूमते हैं (और दोनों में से एक लाल विशाल बन जाता है) तब क्या हो सकता है? ऐसी अवस्था में लाल विशाल का बाहरी कवच अपने साथी तारे के गुरुत्व आकर्षण के कारण विकृत हो जाता है। धीरे-धीरे लाल विशाल के विस्तार होने पर एक ऐसा क्रान्तिक (critical) चरण आता है कि इसका पदार्थ इसके साथी की ओर अभिकर्षित हो जाता है। हाइड्रोजन का एक सेतु बन जाता है जो उन गैसों से बनता है जो लाल विशाल से निकल कर उसके साथी के चारो ओर एक रिंग बनाती हैं। युग्मतारा बीटा लिरे (Beta Lyrae) ऐसी स्थिति का प्रारूपिक उदाहरण है (चित्र 36)। रिंग से हाइड्रोजन निकल कर लगातार साथी तारे की सतह पर इकट्ठी होती है जिससे सतह का तापमान बढ़ जाता है। जब सतह का तापमान इतना बढ़ जाता है कि हाइड्रोजन संगलन अभिक्रिया हो सके, तब विस्फोटन हो जाता है और जब सहचर तारे की सतह का विस्फोटन होता है, तब हमें यह विस्फोटन नोवा के रूप में दिखाई देता है। चूंकि दोनों तारों में से कोई भी तारा विस्फोट के कारण पूर्ण रूप से नष्ट नहीं होता है, केवल सहचर तारे का बाहरी भाग ही नष्ट होता है, इसलिए यह प्रक्रम फिर से शुरू हो सकता है और कहीं 100 वर्ष बाद फिर नोवा विस्फोटन हो सकता है।

हमारा सूर्य एक चक्रिका (disc) जैसे मंडल में बसता है। जिसमें दस हजार करोड़ तारे हैं और इसे आकाश-गंगा (Milky way Galaxy) कहते

चित्र 36. **बीटा लिरे समूह**

हैं (अध्याय 18 देखें)। ऐसा अनुमान किया जाता है कि इस आकाश गंगा में प्रतिवर्ष कई दर्जन नोवाओं का विस्फोटन होता है। लेकिन इसमें से अधिकतर दिखायी नहीं देते क्योंकि चक्रिका की धूल द्वारा इनके प्रकाश का अवशोषण हो जाता है। हमें नोवाओं के विषय में अधिकतर ज्ञान दूसरी गैलेक्सी के नोवाओं के अध्ययन से प्राप्त हुआ है।

एक नोवा किसी तारे का सम्पूर्ण विस्फोटन नहीं, बल्कि उस तारे के बाहरी कवच का विस्फोटन है जो युग्मतारे का एक भाग है। फिर भी कभी-कभी पूरा तारा विस्फोट करता है। ऐसी घटना कम होती है लेकिन जब ऐसा होता है तो उसे सुपर्नोवा (Supernova) कहते हैं। सुपर्नोवा के समय तारे की ज्योति (10^{10}) हजार करोड़ गुना बढ़ जाती है। कुछ सुपर्नोवा की चमक एक पूरी गैलेक्सी की चमक के बराबर भी देखी गई है अर्थात् एक

तारा थोड़े समय के लिए दस हजार करोड़ तारों की चमक से भी अधिक चमकीला हो जाता है।

प्राचीन अभिलेख से पता चलता है कि 6 सुपर्नोवा विस्फोटन पिछले कई हजार वर्षों में हमारी गैलेक्सी में हो चुके हैं। सबसे प्रसिद्ध सुपर्नोवा चीन के खगोलज्ञों ने 1054 ए.डी. में अंकित किया। आकाश का वह भाग जहां यह देखा गया था अब एक विचित्र दृश्य है। इसे क्रैब नेबुला (crab nebula) कहते हैं और इसमें ज्वाला भरी गैस के तंतु दिखाई देते हैं। इससे विस्फोटन होने के स्पष्ट चिन्ह मिलते हैं। डाप्लर स्थानान्तरण (Doppler Shift) का मापन करने से और कई वर्षों के फोटोग्राफ मिलाने से यह पता चलता है कि क्रैब नेबुला, विस्फ़ोटन के कारण बना और यह विस्फोट हजार वर्ष पहले हुआ था।

दूसरे सुपर्नोवा के अवशेष आकाश के दूसरे भाग में देखे जा सकते हैं। सिग्नस में वील नेबुला (Veil Nebula) एक सुन्दर उदाहरण है। यह अवशेष उस विस्फोटन का है जो कई हजार वर्ष पहले हुआ था।

किन कारणों मे एक तारे का विस्फोटन होता है यह अभी पूरी तरह समझ में नहीं आया है। दो मुख्य प्रकार के विस्फोटन हो सकते हैं–टाइप I सुपर्नोवा जो बहुत विकासपूर्ण तारों का होता है और जिनका द्रव्यमान कम होता है और टाइप II सुपर्नोवा जो भारी द्रव्यमान वाले तारों का होता है। टाइप I सुपर्नोवा विस्फोटन शायद उस समय होता है जब "कार्बन फ्लैश" (Carbon flash) होता है। यह हीलियम फ्लैश के जैसी क्रिया है जिसके विषय में हम पहले बता चुके हैं। कार्बन के अपभ्रष्ट क्रोड में कार्बन के जलने से होने वाला विस्फोट, हीलियम फ्लैश विस्फोट से भी अति भयंकर होता है। इस विस्फोट से पूरे तारे का धमन हो सकता है। टाइप II सुपर्नोवा

विस्फोटन लाल विशाल के लौह क्रोड में होता है (जिनका द्रव्यमान सूर्य से दस गुना है)। जब लौह क्रोड बहुत बड़ा हो जाता है तब इसके केंद्र में घनत्व इतना अधिक बढ़ जाता है कि लोहे के नाभिक, क्रोड के इलेक्ट्रानों को निगलने लगते हैं। नाभिक के प्रोटान, इलेक्ट्रान से मिलकर न्यूट्रान और न्यूट्रीनो बनाते हैं। इस क्रिया के बाद जो नाभिक बनता है वह स्थायी नहीं होता अतः वह नाभिक टूटने लगता है और उसमें से न्यूट्रान और अल्फा-कण निकलते हैं। क्रोड से न्यूट्रान और न्यूट्रीनो की अधिक मात्रा में निकल जाने से, क्रोड का तेजी से निपात होता है। क्रोड के निपात होने से, और न्यूट्रानो की बाढ़ का क्रोड के बाहरी परमाणु नाभिकों द्वारा अवशोषण होने से थोड़े ही समय में बहुत ऊर्जा पैदा हो जाती है। इससे जो विस्फोट होता है वह टाइप II सुपर्नोवा होता है।

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सफेद बौने और न्यूट्रान तारे

अध्याय 12 में हमने देखा कि तारे अपनी अधिकतम जीवनी मुख्य अनुक्रम पट्टी में बिताते हैं। उसके बाद उनका विस्तार होता है और वे लाल विशाल बन जाते हैं। लाल विशाल के जीवन के अन्तिम चरण में उसके क्रोड का निपात होता है और वह सफेद बौने का रूप ले लेता है।

सफेद बौने का पदार्थ इलेक्ट्रान का अपभ्रष्ट सागर है जिसमें नाभिक तैरते हैं। सैद्धांतिक रूप से सुब्रमनियम चन्द्रशेखर ने अध्ययन किया कि ऐसी अवस्था में किस प्रकार "इलेक्ट्रान अपभ्रष्ट सागर" नियमों का पालन करेगा। इस अध्ययन से उन्होंने सफेद बौनों के कई रोचक गुणों का पता लगाया। इनमें से एक गुण सफेद बौने के द्रव्यमान और त्रिज्या में संबंध बताता है। छोटे सफेद बौनों का द्रव्यमान बड़े बौनों से अधिक है। यह नियम्म चित्र 37 में आरेखित है।

इस चित्र से तुरन्त यह स्पष्ट हो जाता है कि किसी भी सफेद बौने का

द्रव्यमान सूर्य के द्रव्यमान से 1.4 गुने से अधिक नहीं हो सकता है।

चित्र 37. **द्रव्यमान-त्रिज्या संबंध सफेद बौनों के लिये**

अब प्रश्न यह उठता है कि उस तारे के निपातशील व जले हुए क्रोड का क्या होता है जिसका द्रव्यमान इतना अधिक है कि वह सफेद बौना बन ही नहीं सकता। हमने पहले देखा कि जब छोटे द्रव्यमान के तारे के अन्दर के इलेक्ट्रान अपभ्रष्ट हो जाते हैं तो उसका निपातशील क्रोड सफेद बौना बन जाता है। लेकिन अगर क्रोड का द्रव्यमान सूर्य के द्रव्यमान से 1.4 गुना अधिक है तब ऐसा नहीं हो सकता, क्योंकि तब इलेक्ट्रान अपभ्रष्ट नहीं हो सकेंगे। इसलिये उसके क्रोड का निपात होता जाएगा और सभी संगलन अभिक्रियायें तब तक होती जायेंगी जब तक कि लौह क्रोड न बन जाए। यह निपात तब तक चलेगा जब तक कि केन्द्रीय घनत्व, जल के घनत्व से 10^{11} गुना न हो जाए। इस घनत्व पर परमाणु नाभिक, इलेक्ट्रानों को निगलने लगेंगे। इसकी क्रिया $p + e^- \rightarrow n + \bar{\nu}$ है। जैसा कि पिछले अध्याय में समझाया गया है कि इस अभिक्रिया के कारण सुपर्नोवा विस्फोटन हो सकता है, जिससे तारे के क्रोड का अधिकतम भाग निकल सकता है। बचे हुए क्रोड का और भयंकर निपात होगा और इस स्थिति में सभी इलेक्ट्रान, नाभिकों द्वारा निगल लिये जायेंगे और क्रोड में केवल न्यूट्रान रह जायेंगे। निपात उसी अवस्था में रुकेगा जब न्यूट्रान आपस में दब कर इतना करीव आ जायेंगे कि पदार्थ असंपीड्य हो जायेगा। अब क्रोड, न्यूट्रान का अपभ्रष्ट

सागर हो जायेगा ठीक वैसे ही जैसे सफेद बौने इलेक्ट्रान का अपभ्रष्ट सागर हैं। इस अवस्था में इसका घनत्व, जल के घनत्व से 10^{14} गुना हो जायेगा। इस तारे को अब न्यूट्रान तारा कहेंगे। यद्यपि इसका व्यास 20 किलोमीटर के आसपास है फिर भी इसका द्रव्यमान सूर्य से अधिक है। न्यूट्रान तारे का कवच केवल एक या दो सेन्टीमीटर मोटा होता है। कवच के नीचे एक ठोस पटल होता है जो क्रिस्टलीय हो सकता है। इसमें परमाणु एक नियमित संरचना में रहते हैं। पटल के नीचे अपभ्रष्ट न्यूट्रान का सागर होता है जो न्यूट्रान तारे का अधिकतम भाग है।

सफेद बौनों की ही भांति न्यूट्रान तारों का भी सीमान्त द्रव्यमान (limiting mass) होता है। यह सीमांत द्रव्यमान परिशुद्ध रूप से नहीं मालुम है क्योंकि न्यूट्रान तारे के विषय में पूरी जानकारी अभी प्राप्त नहीं है। शायद इसका द्रव्यमान सूर्य के द्रव्यमान से 2 या 2.5 गुना है। यदि किसी तारे का जला हुआ क्रोड इससे भी अधिक द्रव्यमान का है तब वह न तो सफेद बौना और न ही न्यूट्रान तारा बन सकता है। अगर उसके निपात होने पर वह इस अवस्था में पहुँच गया है कि वह पूर्ण रूप से न्यूट्रान का सागर बन गया है तब बिना अपभ्रष्ट हुये इसका निपात होता जायेगा। यह असंपीड्य नहीं है इसलिए इस क्रोड का निपात होना नहीं रुकेगा और इसका अन्तिम परिणाम ''ब्लैक होल'' होगा। इसके विषय में अगले अध्याय में हम पढ़ेंगे।

न्यूट्रान तारे को ढूंढ निकालना और सिद्धांत (Theory) से मिले हुए प्रेक्षण से उसका मेल कराना अभी तक काफी कठिन कार्य था। उनके इतने लघु होने के कारण दूरबीन से देखना भी संभव नहीं था। जिस प्रकार ऐनटोनी हिवइश (Antony hewish) ने 1967 में इन्हें खोजा, वह एक अचम्भे की बात है। इससे खगोलज्ञों में काफी सनसनी फैल गयी। हिवइश

कैम्ब्रिज विश्वविद्यालय में रेडियो खगोलज्ञ हैं। जब यह खोज हुई उस समय वे न्यूट्रान तारा नहीं ढूंढ रहे थे बल्कि कुछ और देख रहे थे। अपने विद्यार्थियों के साथ वे विश्व में क्वेसार (Quasar) (अध्याय 23 देखें) से आयी रेडियो तरंग के प्रस्फुरण (Scintillation) की जांच कर रहे थे। यह प्रस्फुरण, रेडियो स्रोत से आने वाले विकिरण में यादृच्छिक परिवर्तन (random variation) होने के कारण होता है। यह परिघटना तारों के स्फुरण (twinkle) जैसी ही है जो पृथ्वी के वायुमंडल जिससे कि प्रकाश की किरणें गुज़रती हैं, में घनत्व के अनियमित परिवर्तन के कारण होता है। यह जानी हुई बात है कि ग्रह, तारों जैसा स्फुरण नहीं करते इसका कारण यह है कि प्रकाश की किरणें ग्रहों के अलग-अलग भाग से वायुमंडल के भिन्न-भिन्न रास्तों से आती हैं, इसलिए रोशनी की तीव्रता का औसत ही प्राप्त होता है जिसके कारण हम स्फुरण नहीं देख पाते हैं। स्फुरण से हम आकाश में किसी दीप्त वस्तु का कोणीय माप पता लगा सकते हैं। इसी प्रकार किसी खगोलिक वस्तु से आ रही रेडियो तरंग के प्रस्फुरण की जांच करके हम उसका कोणीय विस्तार जान सकते हैं। रेडियो तरंगों का प्रस्फुरण पृथ्वी के वायुमंडल के कारण नहीं होता है बल्कि यह क्षितिज में चार्ज वाहित कणों (charged particles) के कारण होता है, विशेषकर सूर्य के कोरोना* से आने वाले चार्ज वाहित कण। रेडियो स्रोत से आयी तरंग के प्रस्फुरण की जांच करते समय जोसलीन बेल (Jocelyn Bell), हिवइश की छात्रा, ने एक स्रोत देखा जिसका प्रस्फुरण अनियमित नहीं था। इसकी रेडियो तरंगें प्रत्येक सेकंड के बाद नियमित स्पंदों में आ रही थीं। दो स्पंदों के बीच का समय स्थायी था (1.33728 सेकंड)। प्रत्येक स्पंद की अवधि एक सेकंड का सौवां भाग थी

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* कोरोना : सूर्य के चारों ओर गर्म आयनित गैस का विशाल आवरण

(10^{-2} सेकंड)। 1967 के अंत तक दो और स्पंदीय रेडियो स्रोत पाये गये। ये अद्‌भुत खगोलिक पिंड "पलसार" (Pulsar) के नाम से जाने गये।

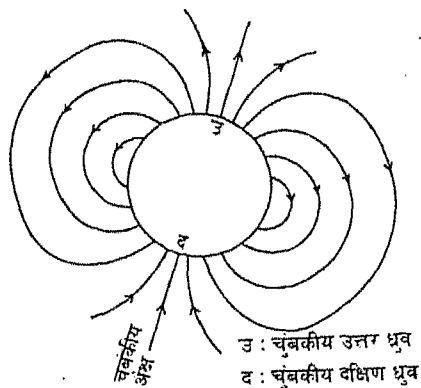
आरंभ से ही पलसार के विषय में काफी परिकल्पना थी। पहले यह सोचा गया कि ये संकेत किसी प्रकार के बुद्धिमान जीव (जैसे मनुष्य) दूसरी जगह से भेज रहे हैं। इस परिकल्पना को एल-जी-एम परिकल्पना (LGM hypothesis) ** कहा गया। लेकिन अब खगोलज्ञ इसे न्यूट्रान तारा मानते हैं। इसका प्रमाण 1968 के क्रैब नेबुला में एक पलसार मिलने से प्राप्त हुआ। क्रैब नेबुला एक सुपर्नोवा का अवशेष है। पिछले भाग में हमने यह बताया था कि किसी तारे के टाइप II सुपर्नोवा विस्फोटन के बाद, वह तारा, न्यूट्रान तारे में बदल जाता है।

क्रैब नेबुला के पलसार का कालांक (Period) 0.033 सेकंड है। इसको 1942 में भी देखा गया था और उस समय इसे बहुत ही गर्म व अद्‌भुत तारा समझा गया था क्योंकि इसके स्पेक्ट्रम में कोई भी अवशोषण या उत्सर्जन रेखा नहीं देखी गयी थी। ब्रांडे ने यह सुझाव दिया कि यह सम्भव है कि यह तारा उस तारे का क्रोड हो, जिसमें 1054 में विस्फोट हुआ था और वह क्रैब नेबुला बन गया। यह तारा सचमुच में पलसार है, यह उस समय साबित हुआ जब इसका दृश्य प्रकाश भी रेडियो तरंग जैसा स्पंदन करते पाया गया।

अब प्रश्न यह उठता है कि न्यूट्रान तारे से किस प्रकार विकिरण नियमित स्पंदों में उत्सर्जित होता है? यह अब हम जानते हैं कि न्यूट्रान तारा एक जले हुए तारा-क्रोड के निपात से बनता है। जैसे-जैसे क्रोड का निपात होता है वैसे-वैसे क्रोड का घूर्णन भी तेजी पकड़ता जाता है। यह कोणीय संवेग के संरक्षण (Conservation of angular momentum) के कारण

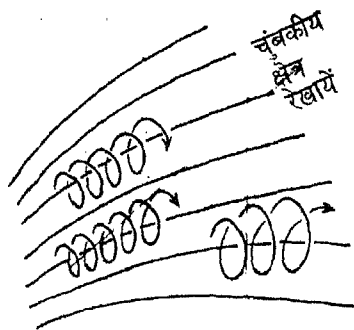
** एल-जी-एम (LGM) : लिटिल ग्रीन मेन-छोटे हरे आदमी

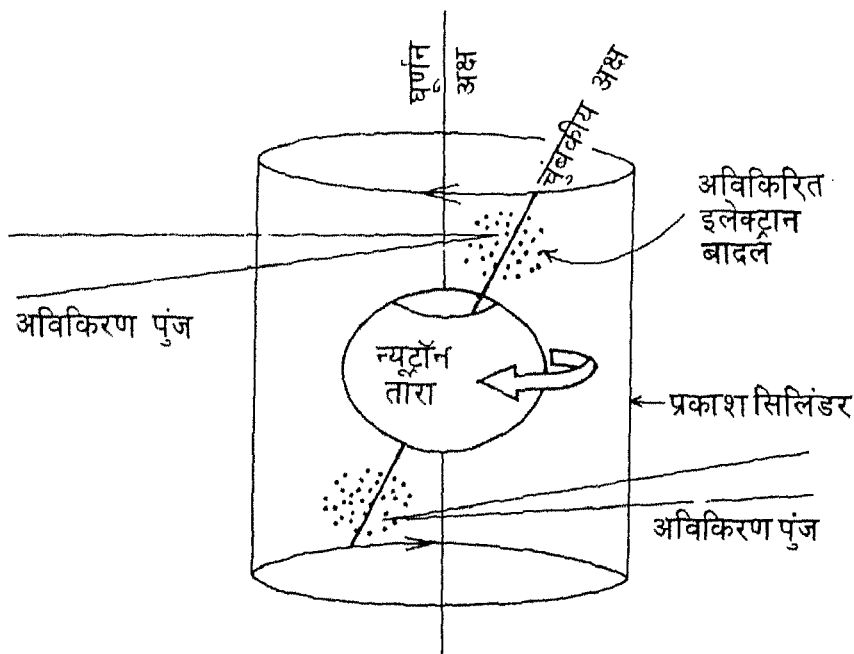
होता है। क्रोड के न्यूट्रान तारे में परिवर्तित होते होते, उसके घूर्णन की गति बहुत तेज हो जाती है (एक परिक्रमण एक सेकंड के छोटे अंश में)। साथ ही इसका चुंबकीय क्षेत्र इसके निपात से और प्रबल हो जाता है क्योंकि चुंबकीय बल रेखाएं आपस में बंध जाती हैं। तारे के निपात के साथ वे आपस में और भी ज्यादा कस जाती हैं। इसलिए न्यूट्रान तारा बहुत तीव्र गति से घूर्णन करने वाला वह पिंड है जिसके साथ का चुंबकीय क्षेत्र बहुत प्रबल है। चित्र 38 में चुंबकीय क्षेत्र की बल रेखाएं किसी पिंड (ग्रह, तारे या न्यूट्रान तारे) से गुज़रती हुई दिखाई गई हैं। चुबंकीय अक्ष और घूर्णन अक्ष एक ही हों यह जरूरी नहीं है। वस्तु का घूर्णन अपने साथ चुंबकीय बल रेखाओं को भी घसीट लेता है यानी चुंबकीय ध्रुव भी वस्तु के साथ घूमेंगे।

न्यूट्रान तारे का कवच यानी न्यूट्रान तारे का वायुमंडल एक या दो सेन्टीमीटर मोटी गैस की परत होता है। यह गैस आयनित (ionised) होती है, यानी इलेक्ट्रान और परमाणु नाभिक बंधे नहीं होते। न्यूट्रान तारा स्वयं एक घूर्णन करने वाले चुंबक के समान है और एक घूर्णन करने वाला चुंबक बिजली धारा पैदा कर सकता है। इसी घूर्णन करते चुंबकीय क्षेत्र से उत्पन्न बिजली द्वारा इलेक्ट्रान (ऋण आवेशित) और परमाणु नाभिक (धन

चित्र 38. **तारों का चुम्बकीय क्षेत्र**

आवेशित) न्यूट्रान तारे के वायुमंडल में एक दूसरे से अलग हो जाते हैं। इलेक्ट्रान एक दूसरे को प्रतिकर्षित करते हैं और यह प्रतिकर्षण तारे के गुरुत्व आकर्षण पर तब विजय पा सकता है जब वायुमंडल में पर्याप्त ऋण आवेश एकत्रित हो जाए। ऐसी स्थिति में इलेक्ट्रान, तारे की सतह को छोड़ते जायेंगे किन्तु धनात्मक आवेश वाले नाभिकों में सतह छोड़ने की प्रवृत्ति बहुत ही कम होगी क्योंकि वे भारी हैं और उन पर गुरुत्व बल अधिक है।

जैसा कि हम जानते हैं कि चुम्बकीय क्षेत्र में घूमता हुआ आवेशित कण, बल रेखा का घूर्णन करता है इसलिए बाहर जाते हुए इलेक्ट्रान, कुंडलिनी (helical) जैसा पथ बनायेंगे (चित्र 39)।

आवेशित कण जैसे-जैसे घूमते जाते हैं वैसे-वैसे ऊर्जा का भी विकिरण करते जाते हैं और इनके विकिरण की आवृति (Frequency) वही होती है जो घूर्णन की होती है। अब उन इलेक्ट्रानों के विषय में सोचिए जो चुंबकीय ध्रुव के निकट बाहर की दिशा में जा रहे हैं। तारे के घूर्णन के कारण चुंबकीय अक्ष तथा उसे घेरे इलेक्ट्रान के बादल दोनों ही भ्रमित होते हैं। अतः इन इलेक्ट्रानों की गति प्रकाश की गति के समीप पहुँच जाती है। आइन्सटाइन के रिलेटिविटी सिद्धांत के अनुसार जब ऐसी स्थिति आती है कि चुंबकीय क्षेत्र में विकिरण करते इलेक्ट्रान की गति प्रकाश की गति के बराबर हो जाती है

चित्र 39. **चुम्बकीय क्षेत्र में आवेशित कणों की गति**

तब चुंबकीय क्षेत्र में घूमते हुए इलेक्ट्रान में से विकिरण प्रमुख रूप से आगे की तरफ से निकलता है। इन विकिरणों को सिंक्रोट्रान विकिरण (Synchrotron radiation) कहते हैं। इसलिए इलेक्ट्रान बादलों में से विकिरण पुंज बाहर की ओर दोनों ध्रुवों से होकर निकलता है। यह चित्र 40 में दिखाया गया है।

चित्र 40. **पलसार की संरचना**

इस चित्र को समझने के लिए यह भी जान लेना जरूरी होगा कि इलेक्ट्रान बादल और चुंबकीय बल रेखा साथ-साथ गतिमान होते हैं। यह आयनित गैस (Plasma), जो चुंबकीय क्षेत्र के पारस्परिक क्रिया में है, का अभिलक्षणिक (Characteristic) गुण है। ऐसा प्रतीत होता है कि चुंबकीय क्षेत्र रेखाएं प्लाज्मा में डूबी हुई हैं और दोनों रेखाओं एवं प्लाज्मा, की गति एक ही है। यह कल्पना की जा सकती है कि न्यूट्रान तारा, उसके आस पास का चुंबकीय क्षेत्र और इसको घेरे इलेक्ट्रान बादल सब एक साथ मिलकर एक दृढ़ वस्तु के समान घूर्णन कर रहे हैं। घूर्णन अक्ष से दूर होने पर यह दृढ़ता नहीं रहेगी क्योंकि रिलेटिविटी सिद्धांत के अनुसार कोई भी कण प्रकाश की गति से ज्यादा तेज नहीं चल सकता। न्यूट्रान तारे के चारों ओर एक 'प्रकाश सिलिंडर' की कल्पना की जा सकती है। यह एक काल्पनिक सतह है जिसे यदि तारे के घूर्णन के साथ रहना है तो प्रकाश की गति से घूमना पड़ेगा। प्रकाश सिलिंडर की सतह के पास पहुंचते ही इलेक्ट्रानों की गति प्रकाश की गति के लगभग बराबर हो जाती है और वे सिंक्रोट्रान विकिरण का उत्सर्जन करते हैं।

ये किरण पुंज (Light beams) लाइट हाउस के किरण पुंज की तरह चारों ओर प्रसर्प (Sweep) करते हैं। यदि अपने घूर्णन में ये पुंज पृथ्वी को प्रसर्प करें तब हम विकिरण के स्पंद को देख पायेंगे। हम केवल उन्हीं पलसार को देख पायेंगे जिनका पुंज पृथ्वी को प्रसर्प करेगा। यदि ऐसा नहीं होगा तो हम उन्हें नहीं देख पायेंगे। इसलिए अनेकों पलसार हमारे लिए अदृश्य रहेंगे।

पलसार के विकिरण से जो ऊर्जा दूर बहती है उससे न्यूट्रान तारे के घूर्णन में रुकावट (Braking effect) उत्पन्न होती है। इस कारण दो स्पंदों

के बीच के समय में वृद्धि होगी। ऐसा सचमुच पाया भी जाता है। अगर किसी पलसार को कई वर्षों तक देखा जाये तो उसकी स्पंदन गति को मंद होते पाया जायेगा। यह प्रभाव काफी छोटा होता है लेकिन अगर हमारे विचारों के अनुसार ही ऊर्जा उत्पन्न होती है तो गति उतनी ही मंद होती है जितना हम प्रागुक्त करते हैं। क्रैब नेबुला के पलसार के दो स्पंद के बीच का समय (0.03 सेकंड) हर रोज 36 नैनो सेकंड (36×10^{-9} सेकंड) से बढ़ जाता है।

कभी-कभी स्पंदों का यह समय अचानक बदल जाता है। यह परिघटना तारा कंपन के कारण होती है। इसका एक सरल कारण इस प्रकार दिया जा सकता है। एक तेज घूर्णन करने वाला तारा गोल पिंड नहीं है बल्कि यह एक गोलाभ है (ध्रुव पर दबा हुआ और इक्वेटर पर निकला हुआ)। यदि किसी कारण इसका घूर्णन मंद हो जाए तब इसकी आकृति बदलकर और गोल हो जायेगी। जैसे-जैसे न्यूट्रान तारे का घूर्णन मंद होता जाता है वैसे-वैसे इसकी आकृति भी बदलती जानी चाहिए पर ऐसा नहीं होता है। घूर्णन के मंद होने पर न्यूट्रान तारा अपना आकार धीरे-धीरे इसलिए नहीं बदल पाता है क्योंकि वह एक दृढ़ पटल में जकड़ा हुआ है। इसलिए पटल पर दबाव बढ़ता जाता है और यह तब तक बढ़ता जाता है जब तक पटल फट नहीं जाता। फटने पर अचानक आकार में परिवर्तन के साथ ही अचानक घूर्णन समय में भी परिवर्तन होता है।

अब तक सैकड़ों पलसार मिल चुके हैं। सबसे छोटे स्पंदन का समय 0.0015 सेकंड है। इससे पता चलता है कि यह पलसार बहुत ही तेजी से घूर्णन कर रहा है। कोई पलसार इससे ज्यादा गति से घूर्णन नहीं कर सकता क्योंकि घूर्णन करते तारे की इक्वेटर (Equator) पर गति, प्रकाश की गति से कम ही रहेगी।

□□

17

ब्लैक होल

पहले हमने बताया है कि यदि निपात होते हुए तारे के क्रोड का द्रव्यमान इतना अधिक है कि वह न्यूट्रान तारा नहीं बन सकता है तो इस तारे का अंत ब्लैक होल (Black hole) में होगा।

ब्लैक होल बनने की संभावना पहली बार गणितज्ञ लाप्लास ने 1798 में बताई थी। लाप्लास का तर्क समझने के लिए पहले यह जानना होगा कि पलायन वेग (Escape velocity) किसी ग्रह या तारे के लिये क्या अर्थ रखता है। यदि किसी वस्तु को हम पृथ्वी की सतह से ऊपर फेकें तो वह फिर वापस पृथ्वी पर आकर गिरती है। लेकिन यदि उसको 11 किलोमीटर प्रति सेकंड की रफ्तार से अधिक रफ्तार से ऊपर फेकें तब वह वापस नहीं आयेगी।

वह पृथ्वी के गुरुत्वाकर्षण से मुक्त होकर अंतरिक्ष की ओर ऊपर बढ़ती जायेगी। यह सीमांत वेग, पलायन वेग है और अंतरिक्ष में जाने वाले किसी राकेट की सबसे कम गति यही होनी चाहिए। इससे कम गति होने पर

राकेट पृथ्वी पर वापस लौट आएगा। किसी ग्रह या तारे (जिसका द्रव्यमान M है और त्रिज्या R) के लिए पलायन वेग (v) निम्न समीकरण द्वारा व्यक्त किया जा सकता है।

$$v = \sqrt{\frac{2GM}{R}}$$

यहाँ, G न्यूटन का गुरुत्व स्थिरांक है (अध्याय 4 देखें)। लाप्लास ने यह बताया कि यदि किसी तारे का द्रव्यमान और त्रिज्या का अनुपात बहुत अधिक हो तब पलायन वेग प्रकाश की गति से भी अधिक हो सकता है इस अवस्था में तारे से कोई प्रकाश बाहर विकिरण नहीं होगा क्योंकि गुरुत्व बल के कारण प्रकाश, तारे की सतह को छोड़ नहीं सकेगा। यह उस समय होता है जब $\frac{M}{R} > \frac{c^2}{2G}$। जहां c प्रकाश की गति है।

वह तारा जो विकिरण नहीं भेज सकता क्योंकि उसके विकिरण उसके गुरुत्व बल से तारे पर बंध गये हैं उसे "ब्लैक होल" कहते हैं। सूर्य के द्रव्यमान के बराबर द्रव्यमान वाला तारा ब्लैक होल बन सकता है अगर उसकी त्रिज्या एक किलोमीटर से कम हो। कुछ समय पहले तक यह सोचा जाता था कि शायद ब्लैक होल बन ही नहीं सकते। लेकिन हम यह जानते हैं कि न्यूट्रान तारे के द्रव्यमान की ऊपरी सीमा सूर्य के द्रव्यमान की 2 से 2.5 गुना है, इसलिए किसी भी निपात होते हुए तारे जिसका द्रव्यमान इससे अधिक है, का निपात होता रहेगा और अन्त में वह ब्लैक होल बन जायेगा।

ब्लैक होल को पूरी तरह समझने के लिए लाप्लास के विचारों से भी

आगे के विचार जानना जरूरी है। इसके अलावा यह जानने के लिए कि क्रोड के गुरुत्व निपात से ब्लैक होल कैसे बनता है हमें न्यूटन के गुरुत्व सिद्धांत को छोड़ना होगा। इसमें कई त्रुटियां हैं। इसके लिए हमें आइन्स्टाइन के गुरुत्व सिद्धांत (जिसे जनरल रिलेटिविटी सिद्धांत कहते हैं, 1916) का प्रयोग करना होगा। साधारण स्थिति में न्यूटन और आइन्स्टाइन के सिद्धांतों में फर्क पाना कठिन है लेकिन तीन ऐसे जांच हैं जिनसे पता चलता है कि आइन्स्टाइन का सिद्धांत ठीक है।

1. न्यूटन के सिद्धांत के अनुसार ग्रह, सूर्य की परिक्रमा इक्लिप्स बनाते हुए करता है। किसी ग्रह का सूर्य के अधिक से अधिक समीप होने की स्थिति को उसका पेरिहिलियन (Perihelion) कहते हैं। आइन्स्टाइन के सिद्धांत के अनुसार पेरिहिलियन सदा एक ही जगह नहीं रहता बल्कि इसका स्थान धीरे-धीरे सूर्य के चारों ओर बदलता रहता है। इसे पेरिहिलियन पुरस्सरण (Perihelion precession) कहते हैं। साफ ज़ाहिर है कि ग्रहों की कक्षा का पेरिहिलियन पुरस्सरण दूसरे ग्रहों के गुरुत्व प्रभाव से होता है। बुध के पेरिहिलियन पुरस्सरण में जो लम्बे समय से त्रुटि चली आ रही थी वह आइन्स्टाइन के सिद्धांत द्वारा पूरी तरह दूर हो गयी।

2. आइन्सटाइन का सिद्धांत यह प्रागुक्त करता है कि जब प्रकाश की किरणें किसी भारी द्रव्यमान वाले पिंड के पास से गुजरेंगी तब वे मुड़ जायेंगी। उदाहरण के लिए वे तारे जो पूर्ण-सूर्यग्रहण के समय सूर्य डिस्क के पास दिखते हैं, वे अपने सामान्य स्थान से थोड़ा हटकर दिखते हैं। इसे 1919 के सूर्य ग्रहण में देखकर आइन्सटाइन सिद्धांत की पुष्टि हुई।

3. तीसरा यह कि प्रकाश के तरंग दैर्ध्य पर गुरुत्व क्षेत्र का प्रभाव पड़ता है। पृथ्वी के गुरुत्व क्षेत्र में यह प्रभाव बहुत ही कम है लेकिन इसका माप

किया जा सकता है। ऊपर जाते हुए प्रकाश को पृथ्वी के गुरुत्व बल के खिचाव के विरुद्ध कार्य करना पड़ता है जिसके फलस्वरूप इसकी तरंग दैर्ध्य का विस्थापन लाल की ओर हो जाता है। इसी तरह नीचे जाते हुए प्रकाश का विस्थापन नीले की तरफ होता है। नापने से यह पाया गया कि यह विस्थापन, आइन्स्टाइन के सिद्धांत द्वारा प्रागुक्त मान के बराबर होता है। इसी तरह प्रकाश जब किसी तारे के गुरुत्व खिंचाव के विपरीत बाहर निकलता है तो उसकी तरंग लम्बाई बढ़ जाती है इसलिए तारे के अवशोषण स्पेक्ट्रम की रेखाओं में भी विस्थापन होता है। इसे गुरुत्व लाल विस्थापन (Gravitational red shift) कहते हैं। सामान्य तारों के लिए यह प्रभाव डाप्लर शिफ्ट से बहुत कम है। पहले (अध्याय 9 में) बताया जा चुका है कि डाप्लर शिफ्ट तारे की गति से संबंध रखता है। गुरुत्व शिफ्ट के लिए प्रकाश के तरंग लंबाई को नीचे दिए हुए गुणक से गुणा करना होगा।

$$1/(1-\frac{2GM}{c^2R})$$

यह गुणक उन तारों के लिए बड़ा है जिनके लिए M/R बड़ा हैं। जब $\frac{M}{R}=\frac{c^2}{2G}$ हो तब यह गुणक अनंत हो जाता है। जब किसी तारे के लिए $\frac{M}{R}>\frac{c^2}{2G}$ हो तब वहां से प्रकाश बाहर नहीं निकल सकता। ऐसा तारा ब्लैक होल बन जाता है। आइन्स्टाइन की यह प्रागुक्ति बिलकुल वही है

जिसे लाप्लास ने अपने विचारों को न्यूटनी सिद्धांत (Newtonian theory) पर आधारित करके निकाला था।

आइये, अब हम उस तारे के क्रोड के गुरुत्व निपात के विषय में सोचें जिसका द्रव्यमान इतना अधिक है कि वह न्यूट्रान तारा बन नहीं सकता। इस तारे के क्रोड का निपात होता जाएगा जब तक इसकी त्रिज्या $\frac{2GM}{c^2}$ के बराबर नहीं हो जाएगी। इसके बाद इस पिंड से कोई प्रकाश, विकिरण या कण बाहर निकल नहीं सकेगा। अब यह बिलकुल अदृश्य हो जायेगा और इसका पता अब सिर्फ इसके गुरुत्व क्षेत्र के प्रभाव से ही चल सकता है। यह तारा अब एक गोले के अंदर है जिसकी त्रिज्या $\frac{2GM}{c^2}$ के बराबर है और इस गोले से अब कुछ भी बाहर नहीं निकल सकता। इस गोले की सतह को स्वार्जसाइल्ड सतह (Schwarzschild surface) या घटना क्षितिज (Event horizon) कहते हैं। इस सतह के अन्दर जो कुछ भी गिरता है वह फिर वापस नहीं आ सकता तथा सदा के लिए वह ज्ञात विश्व से लुप्त हो जाता है।

हम अभी तक जिसका वर्णन कर रहे हैं वह स्वार्जसाइल्ड ब्लैक होल के सम्बन्ध में है और यह होल उस तारे के निपात से बनता है जो घूर्णन नहीं करता। साधारणतया तारे घूर्णन करते हैं और उनकी घूर्णन गति निपात के साथ बढ़ती है। घूर्णन करने वाले ब्लैक होल की बनावट जटिल है तथा इसका घटना-क्षितिज भी गोलाभ (Spheroid) है। घूर्णन करते हुए ब्लैक होल को "केर ब्लैक होल" (Kerr Black hole) कहते हैं।

10-15 गुना है तब अदृश्य तारे का द्रव्यमान सूर्य से 5 गुना से भी अधिक हो सकता है। तब शायद यह ब्लैक होल हो लेकिन निशिचत रूप से यह फिर भी नहीं कहा जा सकता है।

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भाग – तीन

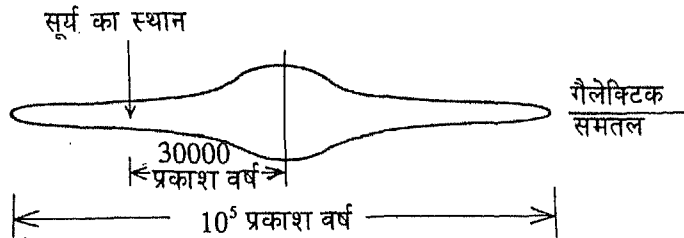
आकाश गंगाएँ
और
ब्रह्मांड विज्ञान

18

आकाश गंगा

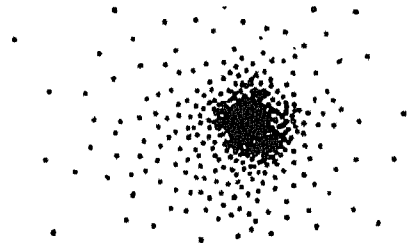
यदि हम नगर के बाहर (बिजली की रोशनी से दूर और जिस दिन चन्द्रमा नहीं दिखाई दे) स्वच्छ रात्रि में तारों भरे आकाश को देखें, तो प्रकाश की एक धुंधली पट्टी दिखाई देगी। इसे आकाश गंगा (Milky way) कहते हैं। यदि दूरबीन से देखा जाए तो करोड़ों तारे जो बहुत दूर और धीमे हैं दिखाई देंगे।

आकाश में तारे यादृच्छिक (Random) रूप में नहीं बिखरे हैं। दूरबीन से देखने पर एक प्रतिरूप नजर आता है। अधिक दूरी पर तारों का घनत्व कम हो जाता है। 1750 में थामस राइट ने सुझाव दिया कि तारे दो समानांतर तलों के बीच बिखरे हैं। इसलिए यदि हम इस तल की समानांतर दिशा में देखें तो तारे दूरी के बढ़ने के साथ एक दूसरे में विलय होते दिखाई देंगे और हमें अन्ततः एक दूधिया कुहासा दिखाई देगा।

तारों के संग्रह का आधुनिक चित्र एक लैंस (जिसमें बीच में उभार है)के जैसा है। इसका एक अनुप्रस्थ काट (cross-section) चित्र 41 में दिखाया गया है।

चित्र 41. **आकाश गंगा**

तारों का ऐसा संग्रह आकाश गंगा कहलाता है। इसमें 10^{11} (लगभग दस हजार करोड़) तारे हैं। इसका व्यास करीब 100,000 प्रकाश वर्ष है। हमारी आकाश गंगा का केन्द्र, तारा मण्डल सेगीटेरियस की ओर है जो इस आकाश गंगा का प्रमुख क्षेत्र है।

1917 में हारलो शेपले ने सूर्य से आकाश गंगा के केन्द्र तक की दूरी का अनुमान लगाया। इसके लिए उन्होंने गोलिका गुच्छों (Globular clusters) को ठीक से जांचा। गोलिका गुच्छ एक पफ के गेंद जैसा है जिसमें 100,000 तारे गुरुत्व आकर्षण से बंधे हैं। (चित्र-42)।

ये गुच्छे हमसे काफी दूर हैं और ज्यादातर गुच्छे मंदाकनीय समतल (Galactic plane) से दूर अलग-अलग दिशाओं में दिखायी देते हैं। इसलिए वे चित्र 41 में प्रदर्शित संग्रह के बाहर हैं। जैसा

चित्र 42. **गोलिका गुच्छ का प्रगरण**

कि चित्र 43 में दिखाया गया है वे आकाश गंगा के चारों ओर बिखरे हैं।

शैप्ले ने आकाश में बिखरे विभिन्न गोलिका गुच्छों का केन्द्र जानना चाहा। इसके लिए उन गुच्छों की दूरियां जानना जरूरी था, इसलिए उनकी दूरियां जानने के लिए उन्होंने उन गुच्छों में मौजूद आर आर लिरे (R R Lyrae) तारों को खोजना शुरू किया। आर आर लिरे तारे परिवर्तनशील तारे (Variable stars) हैं। इनकी ज्योति सूर्य से 100 गुना अधिक है इसलिए इतनी दूरी पर रहते हुए भी इनका पता लगाना संभव है। उनके प्रकाश की तीव्रता बदलती रहती है, जिसका काल एक दिन से कुछ कम है। इसलिए गुच्छों का अलग-अलग समय पर चित्र लेने से और उनको मिलाने से उन तारों को, जिनकी ज्योति में अंतर दिखाई दे, पहचाना जा सकता है। इस प्रकार आर आर लिरे को गुच्छे में पहचानने के बाद उसकी दूरी का भी पता लगाया जा सकता है। इसके लिए उसकी तीव्रता किसी ज्ञात आर आर लिरे की तीव्रता से मिलानी होगी। इस दूरी के आकलन में यह मानकर चलना पड़ता है कि सभी आर आर लिरे तारे समान ज्योति के हैं और अंतरिक्ष की धूल में से गुज़रने पर उनकी रोशनी की तीव्रता में कोई कमी नहीं होती है। किन्तु जब कोई गोलिका गुच्छ बहुत ही दूर हो तब इस विधि

चित्र 43. **आकाश गंगा के चारों ओर गोलिका गुच्छ का झुण्ड**

का प्रयोग नहीं हो सकता है। हां, उसकी दूरी का उसके आभासी व्यास द्वारा आकलन किया जा सकता है लेकिन वह तभी संभव है जब हम यह मानें कि सभी गुच्छे एक ही माप के हैं।

इन विभिन्न गोलिका गुच्छों का स्थान पता लगाने के बाद ही हम झुंड के केन्द्र का निगमन कर सकते हैं। निगमन करने के बाद यह निष्कर्ष निकला कि यह केन्द्र सेगीटेरियस की दिशा में सूर्य से 30,000 प्रकाश वर्ष की दूरी पर है।

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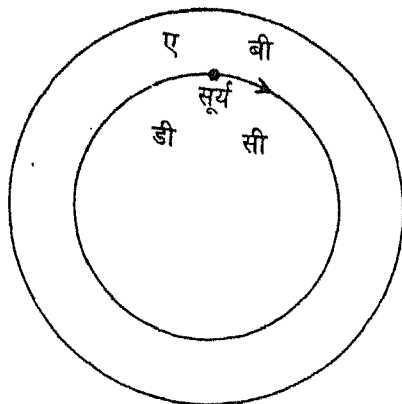
19

गैलेक्सी का घूर्णन

आइये अब आकाश गंगा के डिस्क में तारों की होने वाली गति का एक सरल चित्र लेते हैं। मान लीजिए कि तारे गैलेक्टिक केन्द्र के चारों और वृत्ताकार कक्षा में घूम रहे हैं। (चित्र 44)

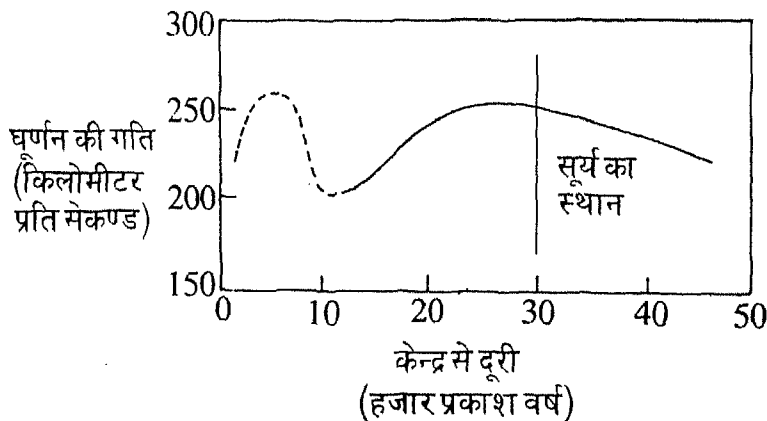
आकाश गंगा का अधिकतम द्रव्यमान केन्द्रीय उभार में रहता है इसलिए तारे इस केन्द्रीय उभार के चारों ओर उसी प्रकार घूमते हैं जैसे सूर्य के चारों तरफ ग्रह। अत: जो तारे केन्द्र से बहुत दूर हैं वे धीमी गति से घूमते हैं और जो केन्द्र के निकट हैं वे तेजी से। चित्र 44 में स्थान 'ऐ' पर दिखाया गया तारा, सूर्य की तुलना में धीमी गति से घूम रहा है। सूर्य इसको पीछे छोड़ रहा है इसलिए पृथ्वी से देखने पर यह पश्चगामी प्रतीत होगा। दूसरी ओर सूर्य, तारा 'बी' की ओर बढ़ रहा है इसलिए पृथ्वी से देखने पर तारा 'बी' हमारी तरफ बढ़ता हुआ दिखाई देगा। इसलिए इसका स्पेक्ट्रम नीले की

ओर स्थानांतरित होगा। इसी तरह तारा 'डी' सूर्य की ओर बढ़ रहा है, इसलिए इसका स्पेक्ट्रम नीले की ओर स्थानांतरित होगा और तारा 'सी' सूर्य से दूर जा रहा है इसलिए इसका स्पेक्ट्रम लाल की ओर स्थानांतरित होगा। अतः यह स्पष्ट है कि सूर्य के आसपास के तारों के डाप्लर शिफ्ट के अध्ययन से हम लोग आकाश गंगा के घूर्णन के विषय में जान सकते हैं।

चित्र 44. **गैलेक्टिक केन्द्र के चारों ओर का घूर्णन**

लेकिन यह मॉडल जिसमें तारे गैलेक्टिक डिस्क में वृत्ताकार कक्षा में घूमते हैं वास्तविक नहीं है, इसलिए जब हम बड़ी संख्या में तारों के डाप्लर शिफ्ट का अध्ययन कहते हैं तब स्पेक्ट्रा के लाल और नीले की ओर स्थानांतरित होने की बात तथा वे तारे की दिशा पर किस प्रकार निर्भर हैं, के विषय में हमारे निष्कर्ष केवल औसत में ठीक हैं।

डाप्लर शिफ्ट से हम लोगों को तारों की गति (पश्चगति या तारों की हमारे निकट आने की गति) के विषय में जानकारी मिलती है। इसके अलावा इससे हम नज़दीक के तारों की उचित गति भी जान सकते हैं। आकाश के किसी क्षेत्र के कई वर्षों की अवधि पर लिये गये चित्रों को एक दूसरे से मिलाने पर पता चलता है कि पास का तारा, दूर के तारों की पृष्ठभूमि में कितना घूम गया है। इस जांच से साफ पता चलता है कि घूर्णन का केन्द्र सेगीटेरियस तारामंडल की तरफ है और यह सूर्य से 30,000 प्रकाश वर्ष की दूरी पर है।

इससे यह भी पता चलता है कि सूर्य और सूर्यमंडल इस घूर्णन केंद्र के चारों ओर 20 करोड़ वर्ष में एक चक्कर पूरा करते हैं।

सूर्य के निकट के तारों में वे तारे जो गैलेक्टिक केंद्र से दूर हैं औसतन धीरे चलते हैं और वे तारे जो गैलेक्टिक केन्द्र के निकट हैं औसतन तेज चलते हैं। यही आशा भी की जाती है क्योंकि अधिकतम द्रव्यमान केन्द्र के पास होता है। घूर्णन की गति, केन्द्र से बाहर की ओर बढ़ने पर किस प्रकार बदलती है यह चित्र 45 में दिखाया गया है।

चित्र 45. **आकाश गंगा का घूर्णन वक्र**

इस चित्र को घूर्णन वक्र (Rotation curve) कहते हैं। इससे यह पता चलता है कि आकाश गंगा का द्रव्यमान किस प्रकार बिखरा है। नोट कीजिए कि किस प्रकार तारे की गति गैलेक्टिक डिस्क के बाहर की ओर जाने पर

धीरे-धीरे कम होती जाती है। यदि सारा द्रव्यमान केन्द्रीय क्षेत्र में ही संकेन्द्रित हो, तब बाहरी भाग के घूर्णन की गति तेजी से गिर जायेगी, यह हम केप्लर के तीसरे नियम से जानते हैं। लेकिन गति में धीमा पतन होता है और यह तभी संभव है जब हमारे अनुमान से अधिक द्रव्यमान केन्द्र से दूर हो। इसलिए वक्र आकार से पता चलता है कि गोलिका गुच्छों का एक बड़ा प्रभामंडल (Halo) है (चित्र 43) जिसमें अदृश्य पदार्थ के अलावा गुच्छे भी हैं। गैलेक्सी के चारों ओर इन प्रभामंडलों का होना ब्रह्मांड में लुप्त द्रव्यमान के प्रश्न (अध्याय 24 देखिये) से संबंध रखता है। कई समीप के आकाश गंगाओं का घूर्णन वक्र, डाप्लर शिफ्ट देखकर तैयार किया गया है जिनसे यह पता चलता है कि ये वक्र किस प्रकार बदलते हैं।

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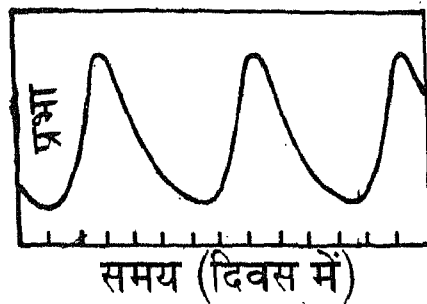
आकाश गंगाओं की दूरी

आकाश गंगा (Milky way) के विषय में जिसका सदस्य हमारा सूर्य मंडल भी है, पिछले अध्याय में वर्णन किया गया है। ब्रह्मांड में ऐसी अनेकों आकाश गंगाएं हैं जिनको परागांगेय निहारिका (नेबुली) (Extragalactic Nebulas) कहते हैं। लैटिन में नेबुली का अर्थ बादल होता है, इसलिए इस शब्द का अर्थ है "आकाश गंगा के बाहर वाले बादल" और यह दूरबीन से एक धुंधला क्षेत्र दिखता है। ये इतनी दूर हैं कि इनमें अलग-अलग तारे नहीं दिखाई देते। केवल समीप वाली आकाश गंगा में हम यह देख सकते हैं कि धुंधले क्षेत्र में तारे हैं।

समीप के आकाश गंगाओं की दूरी उनमें विद्यमान सीफाइड परिवर्ती (Cepheid Variables) तारों को देखने से आँकी जा सकती है। सीफाइड परिवर्ती एक विशेष प्रकार का तारा है जिसकी ज्योति एक खास प्रकार से बदलती है। इस तारे का नाम तारा मंडल सेफिअस (Cepheus) में इस

प्रकार का पहला तारा, डेल्टा-सीफाई (Delta Cephei) के नाम पर रखा गया। इन तारों की ज्योति तेजी से उच्चतम मान पर पहुँच जाती है और फिर धीरे-धीरे निम्नतम मान पर पहुँचती है। यह चक्र समय के साथ चलता रहता है। एक चक्र (एक अधिकतम मान से दूसरे अधिकतम मान तक या फिर एक निम्नतम मान से दूसरे निम्नतम मान तक) पूरा होने की अवधि कुछ दिन है (चित्र 46)।

चित्र 46. **डेल्टा सीफाई का ज्योति वक्र**

सीफाइड की एक विशेषता यह है कि उसका स्पंदन काल (Period of Pulsation) और उसकी उच्चतम ज्योति, आपस में संबंधित हैं। इसलिए यदि किसी समीप के सीफाइड की दूरी मालूम हो जाए तब दूर स्थित सीफाइड की दूरी उसके स्पंदन काल मापने से तथा उसकी दृष्ट प्रभा (Apparent brightness) की ज्ञात दूरी वाले सीफाइड की ज्योति से तुलना करने पर ज्ञात हो सकती है।

लेकिन कोई भी सीफाइड इतना समीप नहीं है कि पैरेलेक्स विधि (अध्याय 7) से उसकी दूरी का पता लगाया जा सके। कुछ सीफाइड खुले गुच्छे (open cluster) के भाग होते हैं। यह खुले गुच्छे तारों के संग्रह हैं जो गैलेक्टिक डिस्क में होते हैं लेकिन इनमें गोलिका गुच्छे के मुकाबले कम तारे होते हैं। ये अधिक फैले हुए होते हैं तथा इनका कोई निश्चित आकार नहीं

होता है। हम यह मान सकते हैं कि एक खुले गुच्छे के सभी तारे पृथ्वी से एक ही दूरी पर हैं। किसी एक खुले गुच्छे के तारों के लिए H-R आरेख बनाकर तथा इस आरेख के मुख्य क्रम के तारों की दृष्ट प्रभा की, ज्ञात दूरी वाले तारों की दृष्ट प्रभा से तुलना करने पर, उस खुले गुच्छे के तारों की दूरी ज्ञात की जा सकती है। इस प्रकार खुले गुच्छे में स्थित सीफाइड की दूरी, निर्धारित की जाती है।

सीफाइड बड़े चमकीले तारे हैं इसलिए हमारी आकाश गंगा के अलावा दूसरी आकाश गंगाओं में भी वे देखे जा सकते हैं। इस प्रकार इन आकाश गंगाओं की दूरी का पता लगाया जा सकता है।

हमारी आकाश गंगा के सबसे समीप दो आकाश गंगाए हैं। इन्हें "मैजैलैनिक बादल" (Magellanic Clouds) कहते हैं। नग्न आंख से देखने पर ये आकाश गंगा के बड़े टुकड़े जैसे दिखते हैं, लेकिन ये अलग हैं और पृथ्वी के दक्षिण अर्धगोल से दिखाई देते हैं। ये सूर्य से 200,000 प्रकाश वर्ष की दूरी पर हैं और हमारी आकाश गंगा के मुकाबले ये छोटे हैं। सीफाइड की मैजैलैनिक बादल के अन्दर अध्ययन करने पर सीफाइड के काल-ज्योति नियम की खोज हुई। वह आकाश गंगा जो हमारी आकाश गंगा के सबसे समीप है और उससे आकार और विस्तार में मिलती है, "एन्ड्रोमिडा में बड़ा नेबुला" है। यह नग्न आंखों से छोटा, धीमा और धूमिल धब्बा दिखाई देता है। दूरबीन से देखने पर और फोटो में यह एक अद्‌भुत पिंड के रूप में निखर आता है। एन्ड्रोमिडा आकाश गंगा, करीब 20 लाख प्रकाश वर्ष की दूरी पर है।

जब कोई आकाश गंगा इतनी दूर हो, कि उसके सीफाइड तारे दिखाई न दें तब उसकी दूरी का पता लगाने के लिए कुछ कमजोर तरीकों का प्रयोग

करना पड़ता है। उदाहरण के लिए हम ऐसी आकाश गंगा के सबसे चमकीले तारे को देख कर यह मान सकते हैं कि उसकी ज्योति हमारी आकाश गंगा के सबसे चमकीले तारे के बराबर है या फिर हम इसके गोलिका गुच्छे की ज्योति की अपनी आकाश गंगा के गोलिका गुच्छे की ज्योति से तुलना करके देख सकते हैं। इस गैलेक्सी के किसी नोवा (अध्याय 15) की प्रभा, की भी दूरी पता लगाने के लिए प्रयोग किया जा सकता है। बहुत दूर की आकाश गंगाओं के लिए हम उनकी दृष्ट प्रभा को एक औसत ज्योति मान सकते हैं। इस दूरी को "ज्योति दूरी" (Luminosity distance) कहते हैं। आकाश गंगा के स्पेक्ट्रम के लाल शिफ्ट से भी हम दूरी का पता लगा सकते हैं (अध्याय 22)।

पालोमार 200 इंच दूरबीन द्वारा लम्बे उद्भासन काल (Exposure time) के साथ फोटो लेने पर सबसे दूर की आकाश गंगाएं छोटे बिन्दु के रूप में फोटो में दिखाई देती हैं। ये हमसे हजार करोड़ प्रकाश वर्ष की दूरी पर हैं। इस दूरबीन की इस बृहत् परास (Enormous range) के कारण हम लोग इससे हजार करोड़ आकाश गंगाएं देख सकते हैं और प्रत्येक आकाश गंगा में 10 हजार करोड़ तारे होते हैं। फिर भी देखा जाने वाला यह इतना विशाल क्षेत्र ब्रह्मांड का एक छोटा-सा भाग है।

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आकाश गंगा का आकार

सभी आकाश गंगाएँ एक जैसे नहीं दिखतीं। ये तीन प्रकार की होती हैं– इनका रेखाचित्र 47 में दिखाया गया है।

''इलिप्टिकल आकाश गंगा'' (E) चिकनी और बिना किसी विशेष लक्षण के है। इसमें केन्द्र से बाहर की ओर जाने पर तारों का घनत्व कम हो जाता है। अगर तारों का ऐसा एक गोल संग्रह जो गुरुत्व आकर्षण से बंधा हो तथा जिसका निपात उन तारों की गति के कारण संभव न हो, घूर्णन कर रहा हो, ताकि अपकेन्द्री बल के कारण वह चपटा हो जाए तो ऐसे ही आकार (इलिप्टिकल) की आशा भी की जा सकती है।

''सर्पिल आकाश गंगा'' (S) डिस्क जैसी है जिसका केन्द्रीय क्षेत्र उठा हुआ है। केन्द्रीय क्षेत्र के बाहर इसकी विचित्र बनावट है जिसमें दो सर्पिल हाथ निकले हैं।

सर्पिल आकाश गंगा को पृथ्वी से देखने पर हमें उसका किनारे का दृश्य देखने को मिलता है जो चित्र 41 जैसा दिखता है। ज्यादातर इनमें एक काली धारी होती है, जो डिस्क के बाहरी क्षेत्र में धूल के कणों से बनती है।

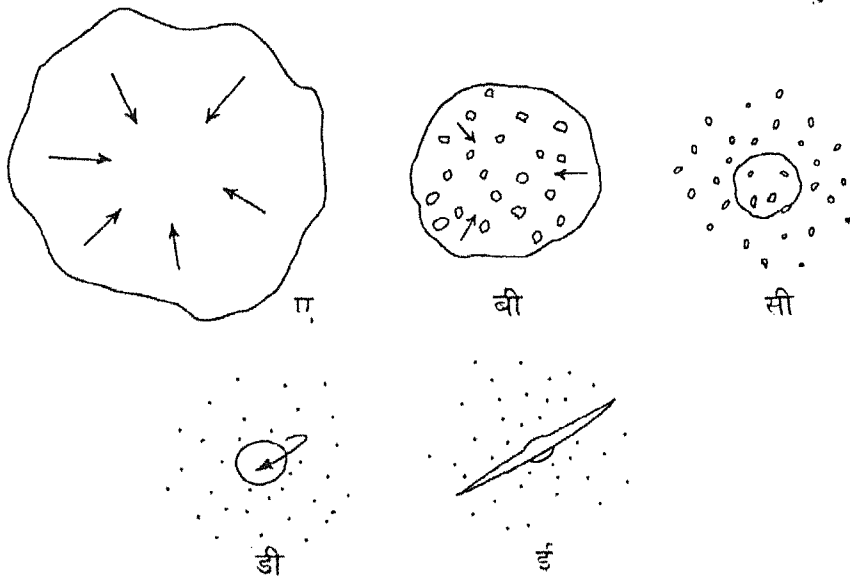
चित्र 47. **तीन प्रकार की आकाश गंगाएं**

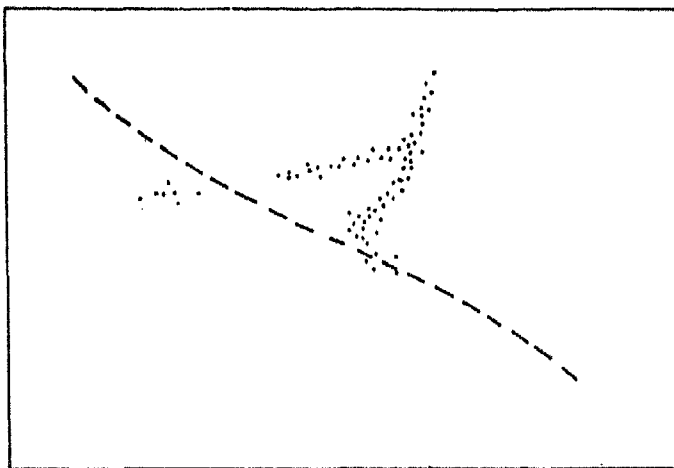
यह धारी भीतरी तारों की रोशनी को रोक लेती है। हमारी आकाश गंगा सर्पिल आकाश गंगा है, लेकिन हम इसके अन्दर होने के कारण इसके सर्पिल हाथ आसानी से नहीं देख पाते हैं। 21 सेन्टीमीटर लंबी तरंगदैर्ध्य की विकिरण जो डिस्क के हाइड्रोजन बादल में से निकलती है, को जांचने से हम इन सर्पिल हाथों का पता लगा सकते हैं। सर्पिल आकाश गंगा में बहुत से गर्म, ज्योतिशील प्रकार के ''ए'' और ''बी'' तारे हैं इसलिए फोटो में सर्पिल हाथ अच्छी तरह उभर कर आते हैं। चूंकि ''ए'' और ''बी'' प्रकार के तारों का जीवन कम होता है अतः ये तारे कम उम्र के हैं इससे पता चलता है कि सर्पिल हाथों में कम उम्र के तारे हैं और यहां नये तारों का जन्म होता है।

''स्तंभ सर्पिल'' (SB) आकाश गंगा में दोनों सर्पिल हाथ एक सीधे स्तंभ के दोनों छोर से उद्भव होते प्रतीत होते हैं। यह सीधा स्तंभ आकाश गंगा के बीच में से गुज़रता है।

इन तीन प्रकार की आकाश गंगाओं के अतिरिक्त कुछ अनियमित (irregular) आकाश गंगाएँ भी हैं। इनके आकार अनियमित हैं तथा ये कुछ छोटी हैं। इनमें केवल 10^{10} या इससे कम तारे होते हैं। दोनों मैजैलैनिक बादल, जिनके विषय में हमने पहले बताया है, इस प्रकार की आकाश गंगाएँ हैं।

अब प्रश्न यह उठता है कि आकाश गंगा (जैसे हमारी आकाश गंगा)कैसे बनती है? हम सबसे पहले एक विशाल गैस के बादल के विषय में विचार कर सकते हैं जिसका द्रव्यमान 10^{11} सूर्य के द्रव्यमान के बराबर हो। गुरुत्व आकर्षण के कारण इसका निपात होने दें (चित्र 48)। ऐसा होने पर इसका आकार गोल होता जाएगा और इसके केन्द्र का घनत्व बाहरी क्षेत्र के घनत्व से अधिक हो जाएगा। आरंभ में जो भी इसका घूर्णन होगा उससे वह अब और भी बढ़ेगा। किसी चरण में आगे चलकर द्वितीयक संघनन होगा जो अंत में गोलाकार तारे गुच्छ का रूप ले लेगा (चित्र 48 बी)। बादल का संकुचन होता रहेगा और गोलाकार तारा गुच्छों का झुंड चारों ओर से इसे घेर लेगा (चित्र 48 सी)। जैसे-जैसे इस बादल का निपात और होता जायेगा इसकी घूर्णन गति तेज होती जायेगी और इसमें अपकेन्द्री बल के कारण चपटापन भी आ जाएगा जिससे इसमें बहुत से तारे भी बन जायेंगे। आखिर में अपकेन्द्री बल (centrifugal force) घूर्णन करते द्रव्यमान के इक्वेटर से, पदार्थ को बाहर की ओर फेंकेगा जो एक डिस्क बन जाएगा। अब हमारे सामने एक डिस्क का चित्र है जिसके केन्द्र में उभार है और चारों ओर गोलाकार तारा गुच्छ है। आकाश गंगा बनने का यह वर्णन बताता है कि सबसे पुराने अर्थात् सबसे अधिक आयु के तारे गोलाकार गुच्छ में होंगे और सबसे कम उम्र के डिस्क में, जो केन्द्रिय उभार के चारों तरफ है। ऐसा सचमुच पाया भी जाता है।

चित्र 49 में हमने हर्ट्ज़स्प्रंग-रसेल आरेख गोलाकर तारा-गुच्छ के लिए दिखाया है। इससे यह पता चलता है कि अधिकतम तारे मुख्य अनुक्रम में नहीं हैं। इन तारों में हाइड्रोजन का जलना समाप्त हो गया है और मुख्य अनुक्रम से अलग हो गए हैं। (चित्र 49 की चित्र 34 से तुलना कीजिए।)

चित्र 48. **आकाश गंगा का निर्माण**

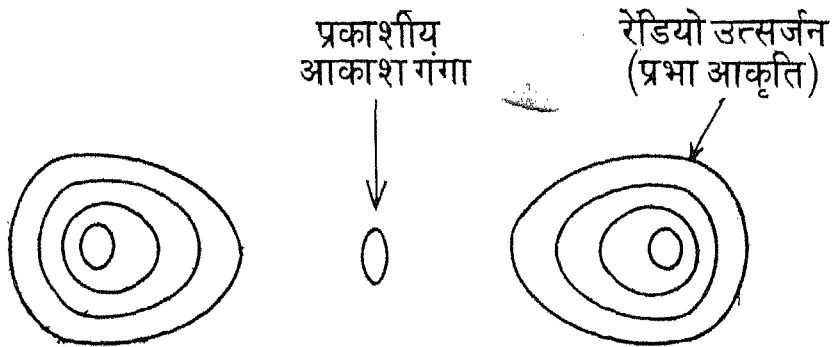
अब इस प्रश्न पर विचार किया जाए कि क्या कारण है कि डिस्क के जिस क्षेत्र में तारे बन रहे हैं वह सर्पिल प्रतिरूप में है तथा डिस्क में अनियमित तरीके से वितरित नहीं है। यह एक कठिन प्रश्न है और इसका उत्तर अभी तक नहीं मिला है। आधुनिक विचार के अनुसार संपीडन (Compression) लहर केन्द्र से बाहर की ओर जाते हुए डिस्क की गैस में से निकलती है (जैसे ध्वनि लहर वायु में किसी स्रोत से बाहर फैलती है)। जैसे ही संपीडन लहर डिस्क के किसी भाग में फैलती है उस भाग के घनत्व में हुई

चित्र 49. हट्र्जस्प्रुंग रसेल (एच-आर) आरेख गोलिका गुच्छ के लिए

वृद्धि द्वारा तारों का संचार आरंभ होता है। संपीडन लहरें आकाश गंगाओं के विशाल आकार के कारण केन्द्र से बाहरी क्षेत्र तक पहुँचने में काफी समय लेती हैं। यदि गैस के डिस्क के केन्द्र में घूर्णन करने वाला कोई स्तंभ हो तो केन्द्र ही में दो सर्पिल संपीडन लहरें बन सकती हैं। स्तंभ-युक्त सर्पिल गैलेक्सी के फोटो में ऐसा होने की संभावना दिखाई देती है। लेकिन किस प्रकार सर्पिल हाथ आकाश गंगा में बनते हैं अभी अच्छी तरह नहीं समझा गया है।

कुछ आकाश गंगाओं के विचित्र गुण हैं। इससे स्पष्ट है कि उन आकाश गंगाओं की प्रकृति और निर्माण के रहस्य के विषय में अभी बहुत

जानना बाकी है जिसके बाद ही हम उनको पूर्ण रूप से समझ पाएंगे। सेफर्ट (Sayfert) आकाश गंगा सर्पिल आकाश गंगा है। यदि उसका अल्प समय का एक फोटो लिया जाए तो उसके केन्द्र में एक छोटा और बहुत चमकीला नाभिक दिखाई देगा (केवल सैकड़ों प्रकाश वर्ष विस्तृत)। सेफर्ट गैलेक्सी के नाभिक का स्पेक्ट्रम दीप्त विस्तृत उत्सर्जन रेखाओं से युक्त है जिनके कारण इसमें बहुत उत्तेजना से चल रही गर्म गैसों के उपस्थित होने का संकेत मिलता है। सेफर्ट आकाश गंगा से प्रबल रेडियो लहर का उत्सर्जन होता है लेकिन इसके नाभिक का क्या रूप है और इतने छोटे क्षेत्र में इतनी ऊर्जा कैसे बनती है यह बड़े रहस्य की बात है।

दूसरी आकाश गंगाओं से भी स्पष्ट होता है कि उनका केन्द्रीय क्षेत्र ऊर्ज़ा से भरा है। किन्हीं-किन्हीं में प्रधार (jet) होने से लगता है कि उनके केन्द्रीय भाग से पदार्थ बाहर फेंका जा रहा है। जेट वाली आकाश गंगा का स्पष्ट उदाहरण ज्योतिभरी इलिप्टिकल आकाश गंगा एन जी सी 4486 (NGC 4486) है एन जी सी-'न्यू जेनरल कैटालाग' के लिए प्रयोग होता है। यह गैलेक्सी और नेबुला की ग्रंथ सूची है जो 1888 में तैयार की गई थी। इसके पूर्व मेसियर ने 1771 में पहली ऐसी सूची बनायी थी जिसमें ऐन्ड्रोमिडा की बड़ी आकाश गंगा को एम-31 (M31) नाम दिया गया था। ये जेट शक्तिशाली रेडियो तरंगों का उत्सर्जन करते हैं। एक प्रसिद्ध विस्फोटी आकाश गंगा एम 82 (M82) है, इसकी जाँच बहुत विस्तारपूर्वक हुई है।

आकाश गंगा से रेडियो तरंग निकलने का प्रक्रम सिन्क्रोट्रान विकिरण जैसा है। इस प्रक्रम में यह विकिरण तब निकलता है जब इलेक्ट्रान चुम्बकीय क्षेत्र में प्रकाश की गति के लगभग बराबर गति से घूमते हैं।

चित्र 50. **दा पाल रेडियो आकाश गंगा की संरचना**

हमारी आकाश गंगा से सबसे प्रबल रेडियो तरंग उत्सर्जित होती हैं और यह
हमारी आकाश गंगा से सबसे प्रबल राडया तरग उत्साजत होता ह आर यह
उत्सर्जन सेगीटेरियस की दिशा से ही अधिकतम होता है क्योंकि यही आकाश गंगा का केन्द्र है।

एक रेडियो आकाश गंगा का सामान्य आकार, चित्र 50 में दिखाया गया है।

रेडियो तरंगें ज्यादातर दोनों पिंडकों (Lobes) से आती हैं। उनके बीच के भाग से, जो आकाश गंगा का दृश्य क्षेत्र है, कमजोर रेडियो उत्सर्जन होता है। ऐसा प्रतीत होता है कि दोनों पिंडक आकाश गंगा के बाहर किसी कारण फेंक दिये गये हैं। यह रेडियो उत्सर्जन पिंडक के पदार्थ एवं आकाश गंगा में फैले पदार्थ की प्रतिक्रिया के कारण होता है।

□□

22

प्रसारी ब्रह्मांड

एडविन पी. हब्वल (1929) ने आकाश गंगाओं के स्पेक्ट्रा का डाप्लर शिफ्ट अध्ययन किया। ये सभी लाल-स्थानांतरण दिखा रहे थे। लाल शिफ्ट दूरी के साथ बढ़ता जाता है। 'डाप्लर प्रभाव के अनुसार लाल शिफ्ट तब देखा जाता है जब प्रकाश का स्रोत हमसे दूर जा रहा हो। इसी से हब्वल ने अनुमान लगाया कि आकाश गंगाएँ हमसे दूर जा रही हैं। इस प्रतिसरण का नियम बहुत सीधा है। एक आकाश गंगा जो हमसे r दूरी पर है और गति v से उसका प्रतिसार हो रहा है उसकी गति निम्नलिखित है:

$$v = H\ r$$

जहाँ H, हब्वल स्थिरांक है। वह आकाश गंगा जो हमसे 10 लाख प्रकाश वर्ष दूर है उसका 15 किलोमीटर प्रति सेकेंड गति से प्रतिसार होता है। इस आकलन में कुछ अनिश्चितता है क्योंकि आकाश गंगा की दूरी का ठीक से पता लगाना कठिन है। कुछ खगोलज्ञ समझते हैं कि इसका मान

इससे भी अधिक है।

जो आकाश गंगा इससे दो गुना दूरी पर है उसका दो गुना गति से और जो तीन गुना दूरी पर है उसका तीन गुना गति से प्रतिसार होगा, इत्यादि।

यह तथ्य कि दूसरी आकाश गंगाएँ हमसे दूर भाग रही हैं, यह नहीं बताता कि हमारी आकाश गंगा केन्द्र में है। हब्वल के नियम के अनुसार, किसी भी आकाश गंगा से ऐसा ही पाया जाएगा।

प्रसारी ब्रह्मांड के एक सहज चित्र की कल्पना हम इस प्रकार कर सकते हैं। मान लीजिए हमारे पास एक गुब्बारा है जिसकी सतह पर कई बिन्दु बनाए गये हैं जो आकाश गंगाएं दर्शाते हैं। गुब्बारे की सतह द्विविमीय (Two dimensional) विश्व को जताती है जिसमें द्विविमीय खगोलज्ञ द्विविमीय आकाश गंगा में रहते हैं। जब गुब्बारा फुलाया जाता है तब प्रत्येक बिन्दु दूसरे अन्य बिन्दुओं से दूर होता जाता है।

इस द्विविमीय विश्व के कुछ और भी मनोरंजक लक्षण हैं। इस द्विविमीय अंतरिक्ष (यहाँ गुब्बारा) की सतह वक्र है, सपाट नहीं। पूरा विश्व सीमित है फिर भी इसका कोई अंत नहीं है। यह परिमित (Finite) है लेकिन अपरिबद्ध (Unbounded)।

यह विस्मय की बात है और ऐसा सोचना कठिन भी है लेकिन यह सत्य है कि इस त्रिविमीय अंतरिक्ष, जिसमें हम रहते हैं, के ये गुण हो सकते हैं। आइंस्टाइन के गुरुत्व सिद्धांत के अनुसार स्थूल वस्तु के आस-पास का आकाश वक्रित (curved) हो जाता है और यह वक्रता ही इस वस्तु का गुरुत्व क्षेत्र है। (एक ब्लैक होल उस समय बनता है जब कोई निपात होता तारा अपने आसपास के आकाश को इतना वक्रित कर देता है कि बाहर के विश्व से उसका कोई संपर्क नहीं रह जाता)। अंतरिक्ष में फैली आकाश गंगाओं से पूरा ब्रह्मांड वक्रित हो जाता है। यदि हम कई हजार आकाश

गंगाओं (जो हमारे चारों ओर हैं) के विषय में जांच करें तो यह पाएंगे कि ये अनियमित तरीके से नहीं बिखरी हैं बल्कि ये गुच्छों में बंट गई हैं। लेकिन यदि हम करोड़ों आकाश गंगाओं का वितरण जांचें तब यह पायेंगे कि ये एक समान घनत्व से वितरित हैं। गुच्छों का बनना छोटे पैमाने पर दिखता है किन्तु जब हम पूर्ण ब्रह्मांड का चित्र देखेंगे तब गुच्छे नजर नहीं आऐंगे। इसलिए हम ऐसा सोच सकते हैं कि त्रिविमीय आकाश एक समान (uniformly) वक्रित है। इसमें तीन संभावनाएं हैं। वक्रता धनात्मक (positive) हो सकती है। इस अवस्था में ब्रह्मांड सीमित लेकिन अपरिबद्ध होगा या फिर सपाट हो सकता है, या वक्रता ऋणात्मक (negative) हो सकती है। आखिर की दोनों स्थितियों में ब्रह्मांड और आकाश गंगाओं की कुल संख्या अनंत होगी।

आइंस्टाइन के गुरुत्व सिद्धांत से हम पूरे ब्रह्मांड का एक चित्र तैयार कर सकते हैं। हम यह पाते हैं कि ऊपर की स्थितियाँ संभव हैं और तीनों स्थितियों में उनका सिद्धांत यह बताता है कि विश्व का प्रसार होगा। जब आइंस्टाइन ने पहली बार यह पाया तो उन्हें यह पसंद नहीं आया। उन्होंने अपने समीकरण में एक और पद (जिसे उन्होंने कास्मोलोजिकल पद कहा)जोड़ दिया। इससे ब्रह्मांड स्थिर हो सकता है। यह हब्वल की खोज के पहले की बात है। जब हब्वल ने अपने प्रेक्षण में यह दिखाया कि ब्रह्मांड का सचमुच प्रसार हो रहा है तब आइंस्टाइन ने अपनी गलती महसूस की और नए पद को हटा दिया।

आइंस्टाइन के सिद्धांत के अनुसार, ब्रह्मांड की सपाटता, धनात्मक (+) वक्रता, या ऋणात्मक (-) वक्रता सभी इसके औसत घनत्व पर निर्भर करते हैं। हब्वल स्थिरांक का प्रयोग करके, क्रांतिक घनत्व 2×10^{-29} ग्राम/सेंटीमीटर^3 निकाला गया। यदि ब्रह्मांड का औसत घनत्व इस

क्रांतिक घनत्व के बराबर होगा तब आकाश सपाट होगा। यदि घनत्व इससे अधिक होगा तब आकाश धनात्मक वक्रित होगा और यदि इससे कम होगा तो ऋणात्मक वक्रित होगा। इन तीनों स्थितियों में ब्रह्मांड का भूत में आरम्भ एक निश्चित समय में होता है (एक बिन्दु जैसा-अनंत घनत्व के साथ)। एक बड़े विस्फोट (Big bang) के साथ इसका आकार बढ़ता है और यह प्रसार चलता रहता है, जो धीरे-धीरे मंद होकर आज की अवस्था में पहुँचता है। यदि वक्रता धनात्मक है तब ब्रह्मांड के पदार्थों के गुरुत्व आकर्षण के कारण प्रसार रुक जायेगा और भविष्य में किसी समय संकुचन शुरू हो जायेगा। इससे ब्रह्मांड संकुचित और घना हो जाएगा और एक अंतर्मुखी विस्फोट (big crunch) के साथ लुप्त हो जाएगा। यदि घनत्व क्रांतिक घनत्व से कम होगा तो आकाश अनन्त होगा और गुरुत्व बल ब्रह्मांड का प्रसार कभी नहीं रोक पायेगा। तब आकाश गंगाएँ एक दूसरे से दूर, और तेजी से भागती जाएंगी। जब समीप की आकाश गंगाओं की प्रतिसार गति प्रकाश गति से अधिक हो जायेगी तो ये हमारे क्षितिज से बाहर हो जाएंगी और हम इन्हें देख नहीं सकेंगे।

जब हम ब्रह्मांड के औसत घनत्व की जांच करते हैं तब एक अचंभा सामने आता है। प्रेक्षित घनत्व क्रांतिक घनत्व से करीब $(\frac{1}{100})$ गुना है। यह चिंताजनक बात है क्योंकि यदि यह सत्य है तो ब्रह्मांड अनंत है और उसमें आकाश गंगाओं की संख्या भी अनंत है। इस अनोखे परिणाम से बचा जा सकता है यदि ब्रह्मांड में कोई ऐसा गुप्त द्रव्यमान हो जिससे अभी तक हम अनभिज्ञ हों। इस प्रश्न को, जिसमें ब्रह्मांड में बहुत अधिक द्रव्यमान अदृश्य रूप में है और जिससे ब्रह्मांड सीमित हो जाता है ''गुप्त द्रव्यमान

का प्रश्न (missing mass problem)" कहा जाता है। खगोलज्ञ सोचते हैं कि काफी मात्रा में द्रव्यमान छिपा है। इसके मिलने से गुप्त पदार्थ के प्रश्न का उत्तर मिल जायेगा। यह गुप्त पदार्थ आकाश गंगाओं के बीच सूक्ष्म गैस हो सकता है या आकाश गंगा के चारों ओर मृत तारों का हेलो। आकाश गंगा के गुच्छों की जांच करने पर यह पता चलता है कि उनका द्रव्यमान जितना हम सोचते हैं उससे ज्यादा है। 1981 में कुछ ऐसे संकेत मिले जिनसे यह ज्ञात हुआ कि कुछ प्रकार के न्यूट्रीनों में थोड़ा द्रव्यमान होता है। इससे पहले भौतिक वैज्ञानिकों में यह विश्वास था कि न्यूट्रीनों में बिलकुल द्रव्यमान नहीं है। ये न्यूट्रीनों कई प्रकार के हैं और उनका द्रव्यमान भी है। अतः ब्रह्मांड में गुप्त द्रव्यमान उनके भारी न्यूट्रीनों की उपस्थिति द्वारा समझा जा सकता है। न्यूट्रीनों की पहचान करना बहुत ही कठिन है क्योंकि पदार्थ से उनकी प्रतिक्रिया अत्यंत कमज़ोर है। एक न्यूट्रीनों पृथ्वी के इस पार से उस पार तक बिना किसी पहचान या रुकावट के जा सकता है। ब्रह्मांड की रचना का सिद्धांत यह बताता है कि न्यूट्रीनों उत्पत्ति के समय, बहुत मात्रा में बने होंगे (अध्याय 24 देखें)।

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क्वेसार

ब्रह्मांड में रेडियो तरंग के स्रोत या तो आकाश गंगाएं हैं या अपनी इसी आकाश गंगा में उपस्थित धूल के बादल। तारों द्वारा भेजी गई रेडियो तरंगें काफी कमज़ोर होती हैं इसलिए रेडियो खगोलिकी में ये अदृश्य रहती हैं। जब 1960 में एक प्रबल रेडियो स्रोत मिला तब यह एक बड़े आश्चर्य की बात समझी गई। इसे 3 सी 48(3C48) कहा गया (3 सी का अर्थ-तीसरा केम्ब्रीज कैटलॉग रेडियो स्रोत से है)। यह स्रोत एक बिन्दु समान पिंड था जो दृश्य भाग में एक हलके नीले तारे जैसा दिखाई दिया। ऐसे, तारे सदृश्य पिंडों की खोज से कई रेडियो स्रोत मिले। सबसे चमकीले स्रोत को (रेडियो तरंग के लिए) 3 सी 273 कहते हैं। पहले इनको ''क्वासी स्टेलर-आबजेक्ट'' (quasi-stellar objects) या क्यू.एस.ओ. कहा गया, बाद में इनका नाम ''क्वेसार (Quasar)'' पड़ा। अब तक एक हजार से अधिक क्वेसार मिल चुके हैं।

शीघ्र ही क्वेसार के अनोखे और रहस्यमय गुण सामने आये। खगोलज्ञ यह समझ गये कि क्वेसार अद्‌भुत पिंड हैं और उनकी खोज खगोल शास्त्र के इतिहास में एक महत्वपूर्ण घटना है।

क्वेसार के स्पेक्ट्रमों में द्युतिमान उत्सर्जन और अवशोषण रेखाएं दोनों ही होती हैं और इनके ये स्पेक्ट्रम किसी भी ज्ञात तारे के स्पेक्ट्रम से बिलकुल अलग पाये गये। यहां तक कि किस प्रकार के परमाणु इस प्रकार की रेखाएं उत्पन्न कर रहे हैं, शुरू में इसका भी पता नहीं चला। बाद में पता चला कि 3 सी 273 की कुछ रेखाएँ साधारण हाइड्रोजन रेखाएं थीं जिनमें लाल स्थानांतरण (Red Shift) बहुत ही अधिक था। शीघ्र ही यह प्रकट हो गया कि सभी क्वेसारों के स्पेक्ट्रमों में लाल स्थानांतरण बहुत अधिक था।

किसी स्पेक्ट्रम के अधिक लाल शिफ्ट होने के दो कारण हो सकते हैं। पहला कारण यह कि जो वस्तु प्रकाश भेज रही है वह विशाल द्रव्यमान या घनत्व की हो और लाल शिफ्ट गुरुत्व के असर से हो (अध्याय 17) या फिर वह वस्तु बहुत अधिक गति से हमसे दूर, पीछे जा रही हो और लाल शिफ्ट डाप्लर शिफ्ट हो (अध्याय 9)। पर यहां क्वेसार के स्पेक्ट्रम में ये रेखाएं इतनी तीक्ष्ण हैं कि यह लाल शिफ्ट गुरुत्व प्रभाव के कारण नहीं हो सकता है। इसलिए अभी तक, किसी अज्ञात प्रक्रम को छोड़कर क्वेसार का यह लाल शिफ्ट डाप्लर शिफ्ट ही है। इससे यह संकेत मिलता है कि क्वेसार हमसे दूर बहुत तेज गति से जा रहे हैं। उदाहरण के लिए 3 सी 273 प्रकाश की 0.16 गुना गति से और 3 सी 48, प्रकाश की 0.37 गुना गति से दूर जा रहे हैं। कुछ क्वेसार का लाल शिफ्ट इतना अधिक है कि इससे उनकी गति का प्रकाश की गति का 0.9 गुना होने का संकेत मिलता है।

क्वेसार की इतनी तेज़ गति इस लिए है क्योंकि वे बहुत दूर वाली

आकाश गंगाओं की दूरी पर हैं और उनकी गति ब्रह्मांड के प्रसार के कारण है। इसी विचार को ब्रह्मांडीय परिकल्पना (cosmological hypothesis) कहते हैं। इस परिकल्पना को आज अधिकांश खगोलज्ञ मानते हैं। लेकिन अगर यह सच है तो सबसे दूर के क्वेसारों को दो हजार करोड़ प्रकाश वर्ष की दूरी पर होना चाहिए। इस प्रकार ये अब तक देखी गई वस्तुओं में सबसे दूर की वस्तु हुए।

ब्रह्मांडीय परिकल्पना से और हब्बल के नियम का प्रयोग करके हम क्वेसार की दूरी का अंदाजा लगा सकते हैं (अध्याय 22)। यह दूरी जानने के बाद, उनकी दृष्ट प्रभा से हम यह अनुमान लगा सकते हैं कि वे अपनी प्रकाशीय एवं रेडियो तरंग दैर्ध्यों पर कितनी ऊर्जा का विकिरण करते हैं। यह पता लगाने के बाद हमने देखा कि एक क्वेसार एक आकाश गंगा से 100 गुना अधिक ज्योतिवान है।

क्वेसारों से आने वाला प्रकाश स्थिर नहीं है। इन्हें एक बार देखने के बाद यदि हम इन्हें कुछ महीनों के बाद फिर देखें तो उनके प्रकाश में समय के साथ अंतर दिखाई देगा। चूंकि किसी भी पिंड की ज्योति में अन्तर उस समय से जितना प्रकाश, उसके एक छोर से दूसरे छोर तक जाने में लेता है कम नहीं हो सकता है अतः स्पष्ट है कि क्वेसार का विकिरण उस भाग से आता है जिसका विस्तार एक प्रकाश वर्ष का एक अंश मात्र है। खगोलज्ञों के सामने यह एक पहेली है कि कैसे एक वस्तु की (जो आकाश गंगा के केवल 10 लाखवें भाग के बराबर है) ऊर्जा उत्पादन दर, आकाश गंगा से 100 गुना से भी अधिक हो सकती है?

एफ. हॉयल और विलियम ए. फाउलर (1963) ने इसके विषय में एक सुझाव दिया है : हम पहले भी देख चुके हैं कि आकाश गंगा का नाभिक एक

ऊर्जा पैदा करने वाला क्षेत्र है। यह सेफर्ट आकाश गंगाओं तथा अन्य ऐसी-ऐसी आकाश गंगाओं में, जिनके केन्द्र से पदार्थ निकलते हैं स्पष्ट दिखाई देता है। हमने यह भी देखा है कि गैस के बादल के निपात से कोई आकाश गंगा कैसे बनती है। इन आकाश गंगाओं की ऊर्जा का स्रोत गुरुत्व ऊर्जा हो सकती है यदि निपात होते क्रोड का द्रव्यमान एक तारे के द्रव्यमान से दस हजार गुना अधिक हो। यदि ऐसा हो तो इस वस्तु का चुंबकीय क्षेत्र इतना तीव्र हो जाएगा कि सिनक्रोट्रान विकिरण क्रिया द्वारा रेडियो तरंगें उत्सर्जित होंगी। हॉयल और फाउलर के सुझाव के अनुसार क्वेसार का ऊर्जा उत्पादन भी इसी क्रिया द्वारा एक बड़े पैमाने पर होता है। इस सिलसिले में यह जानना रूचिकर है कि क्वेसार 3 सी 273 में से एक जेट निकलता है। यह जेट वैसा ही है जैसा कि एक रेडियो आकाश गंगा एन जी सी 4486 (NGC 4486) के नाभिक से निकलता है। हॉयल और फाउलर ने इस विषय पर भी ध्यान दिया कि अगर किसी आकाश गंगा के निपात होते हुए क्रोड का द्रव्यमान सूर्य के द्रव्यमान से 10 करोड़ गुना अधिक हो तो क्या होगा? अगर ऐसा होगा तो यह क्रोड एक सुपर तारा बन जाएगा जिसकी ज्योति क्वेसार की दृश्य ज्योति के बराबर होगी। इसके गुरुत्व निपात से जितनी ऊर्जा का उत्पादन होगा उससे क्वेसार के रेडियो तरंग के उत्सर्जन के लिए पर्याप्त ऊर्जा मिल सकेगी। यह संभव है कि आकाश गंगा का ऐसा क्रोड अन्त में एक विशाल ब्लैक होल बन जाए जो करोड़ों तारों को निगलता हो। क्वेसार के विषय में ये सभी विचार अभी तक केवल परिकल्पनाएं हैं और खगोलज्ञों में अभी भी काफी मतभेद है। यदि ब्रह्मांडीय परिकल्पना सत्य नहीं है तब क्वेसार हमसे, जितना हम सोचते हैं उतनी दूर नहीं होंगे। ये किसी समीप की आकाश गंगा के क्रियाशील केन्द्र से तीव्र गति से फेंकी हुई

वस्तुएं हो सकते हैं। दस करोड़ तारों के बराबर ज्योति रखने वाली ये अद्भु वस्तुएं क्या होंगी? यह फिर भी समझाना एक कठिन समस्या है।

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विशाल विस्फोट

पिछले अध्यायों में हमने बताया कि ब्रह्मांड का प्रसार हो रहा है इसलिए भूतकाल में आकाश गंगाऐं एक दूसरे के समीप रही होंगी और ब्रह्मांड का घनत्व आज से अधिक रहा होगा। आइन्स्टाइन के गुरुत्व समीकरणों को हल करने पर यह पता चलता है कि ब्रह्मांड आज से बीस हजार करोड़ वर्ष पहले आरंभ हुआ होगा। उस समय इसके घनत्व और तापमान अत्यंत ही ऊँचे रहे होंगे। ब्रह्मांड ने अपना जीवन एक विस्फोट के साथ आरंभ किया और इसे हम विशाल विस्फोट (Big Bang) कहते हैं।

कुछ समय पहले एक दूसरा सिद्धांत भी दिया गया था जिसे 'स्थिर अवस्था सिद्धांत (Steady State Theory)' कहते हैं। पहले पहल इसका विचार एच. बोंडी और टी. गोल्ड ने 1948 में दिया। एफ. हॉयल और जयंत वी. नार्लिकर (1963) ने यह दिखाया कि किस प्रकार आइन्स्टाइन के जेनरल रिलेटिविटी थियोरी को बदला जा सकता है। इस सिद्धांत के अनुसार

जैसे-जैसे आकाश गंगायें एक दूसरे से दूर जाती हैं उनके बीच नया पदार्थ कहीं से उत्पन्न होता है। यही पदार्थ अंतरिक्ष में पुनः नये आकाश गंगा का रूप ले लेता है। इस प्रकार ब्रह्मांड का औसत घनत्व, प्रसार होने पर भी स्थिर रहता है। इस सिद्धांत के अनुसार ब्रह्मांड अनंत है और इसका न कोई आदि है और न अन्त। प्रसार के साथ भी यह एक स्थिर अवस्था में रहता है। लेकिन जब माइक्रोतरंग का विकिरण पाया गया जो किसी रेडियो स्रोत से नहीं आता तब स्टेडी स्टेट थियोरी को छोड़ना पड़ा। हाल ही में (1985) जयंत नार्लिकर और टी. पद्मनाभन ने सृष्टि फील्ड सिद्धांत (Creation field theory) एक नये रूप में दिया है। इससे कई समस्याएं दूर हो गयी हैं। जैसा कि हम आगे बतायेंगे इस माइक्रोतरंग विकिरण से विशाल विस्फोट को बहुत बड़ा आधार मिलता है।

इस समय आकाश गंगा को बनाने वाले पदार्थ में बंद ऊर्जा (आइंस्टाइन का विख्यात संबंध $E=mc^2$ जहां E=ऊर्जा, m=द्रव्यमान और c प्रकाश की गति से) करीब हजार गुना उस ऊर्जा से अधिक है जो ब्रह्मांड में विकिरण के रूप में है। हालाँकि आज ब्रह्मांड के आरम्भ के चरणों में विकिरण की प्रधानता अवश्य रही होगी। जैसे-जैसे ब्रह्मांड का प्रसार हुआ (और इसके ऊर्जा के घनत्व में कमी हुई) विकिरण का घनत्व, पदार्थ की ऊर्जा के घनत्व के मुकाबले तेजी से गिरा। अब उस विकिरण प्रधान ब्रह्मांड की कल्पना करें जिसमें पदार्थ परमाणु नाभिकों (जिसमें प्रोटान तथा न्यूट्रान आपस में बंधे हैं) एवं इलेक्ट्रानों के रूप में हैं और ये सब फोटान से अभिक्रिया कर रहे हैं। इस स्थिति में किसी परमाणु के होने की संभावना नहीं है। यदि कोई परमाणु हो भी, तो उसका निष्कासन विकिरण की तीव्रता से हो जायेगा। ब्रह्मांड के प्रसार के साथ विकिरण का ऊर्जा घनत्व, पदार्थ के घनत्व से कम हो जाएगा। इस चरण में नाभिक और इलेक्ट्रान मिल कर

परमाणु बना सकते हैं। अब इस स्थिति में पदार्थ और विकिरण में अभिक्रिया कमज़ोर हो जाएगी और हम यह कह सकते हैं कि विकिरण पदार्थ से अलग हो जाता है। इस चरण में ब्रह्मांड, पदार्थ की प्रधानता में पहुँच जाता है। यह स्थिति तब आई थी जब हमारा ब्रह्मांड 10 लाख वर्ष की आयु का था। उस समय इसका तापमान कई हजार डिग्री केल्विन था। ब्रह्मांड के प्रसार के साथ विकिरण का तापमान कम होता गया और आज इसका तापमान करीब 3 डिग्री केल्विन है (परम शून्य -273 डिग्री सेंटीग्रेट के बराबर है)। 3 डिग्री केल्विन उस विकिरण से संबंध रखता है जिसकी तरंग दैर्ध्य माइक्रोवेव क्षेत्र में पड़ती है (अध्याय 10 देंखें)।

इस "तीन डिग्री माइक्रोवेव पृष्ठभूमि विकिरण" की ए. पेंजियास और आर. विलसन ने 1965 में खोज की थी। इसके बीस साल पहले जार्ज गैमों ने इस विकिरण की प्रागुक्ति की थी। यह किसी स्रोत में नहीं आता लेकिन आकाश में चारों ओर बराबर की मात्रा में फैला है। इसका मिलना, विशाल विस्फोट (बिग बैंग) सिद्धांत के सही होने का एक प्रमाण था।

ब्रह्मांड के जन्म (उत्पत्ति) के 10^{-4} सेकंड के बाद इसका तापमान 10^{12} डिग्री और घनत्व 4×10^{6} ग्राम/से.मी.^{3} था। इस समय से 10 लाख वर्ष बाद तक (विकिरण प्रधान महाकल्प के अंत तक) का समय मानक महाकल्प (standard era) कहलाता है।

मानक महाकल्प में ब्रह्मांड का इतिहास समझने के लिए यह जानना जरूरी है कि 100 करोड़ डिग्री से ऊपर तापमान होने पर परमाणु नाभिक नहीं रह सकता। इस तापमान पर, विकिरण नाभिकों को तोड़ देगा और केवल प्रोटान और न्यूट्रान रह जायेंगे। इस समय हमें एक और अभिक्रिया को ध्यान में रखना होगा। 600 करोड़ डिग्री तापमान से ज्यादा पर युग्म निर्माण (Pair creation) होता है। इस तापमान पर विकिरण के फोटान

(गामा रे), इलेक्ट्रान और पाजिट्रान को एक साथ जन्म देते हैं। ($\gamma \rightarrow e^- + e^+$)। पाजिट्रान, इलेक्ट्रान प्रतिकण (anti particles) हैं। इसलिए 600 करोड़ डिग्री के ऊपर विकिरण के साथ इलेक्ट्रान और पाजिट्रान भी काफी संख्या में मिलते हैं। ऐसे युग्मों का निरंतर बनना और नष्ट होना लगा रहता है।

मानक महाकल्प के आरंभ में ब्रह्मांड एक विकिरण (फोटान) का सागर था जिसमें प्रोटान, न्यूट्रान, इलेक्ट्रान, पाजिट्रान, न्यूट्रीनो और ऐंटीन्यूट्रीनो भी थे। प्रोटान और न्यूट्रान की संख्या लगभग बराबर थी यद्यपि न्यूट्रान का क्षय (अध्याय 14 देखें) होता है, इलेक्ट्रान के बड़ी संख्या में रहने के कारण उलटी अभिक्रिया ($p+e^- \rightarrow n+\nu$) से न्यूट्रान फिर बन जायेंगे। आकाश के किसी क्षेत्र में इलेक्ट्रान न्यूट्रीनों और उनके प्रतिकण लगभग फोटान की संख्या के बराबर होंगे। इसकी तुलना में प्रोटान और न्यूट्रान की संख्या काफी कम (10^{-9} गुना) होगी। क्योंकि पूरा विद्युत आवेश शून्य होना चाहिए, इस लिए इलेक्ट्रान की संख्या पाजिट्रान की संख्या से बहुत थोड़ी ही अधिक होगी।

जैसे-जैसे तापमान कम हुआ न्यूट्रान का क्षय तेज होता गया। उलटी अभिक्रिया जिसमें प्रोटान और इलेक्ट्रान टकराकर न्यूट्रान और न्यूट्रीनो बनाते हैं इस क्षय को पूरा नहीं कर सके। इसलिए न्यूट्रान की संख्या प्रोटान से कम हो गयी। जब तापमान और कम होकर 600 करोड़ डिग्री से भी कम हो गया जो कि युग्म इलेक्ट्रान-पाजिट्रान बनने के लिए आवश्यक है, इलेक्ट्रान और पाजिट्रान के बीच संघट्टन ($e^-+e^+ \rightarrow \gamma$) तेज हो गया और यह तब तक चला जब तक सभी पाजिट्रान खत्म नहीं हो गये। इस प्रकार केवल इलेक्ट्रान (जो थोड़ा अधिक मात्रा में थे) और उतने ही प्रोटान बच गये। इस चरण में

ब्रह्मांड के जन्म के बाद तीन मिनट बीत चुके हैं। इस समय ड्यूटेरियम नाभिक (प्रोटान और न्यूट्रान के संघट्टन से) बन रहे थे— लेकिन इनका जीवन काफी कम था। जैसे ये बनते थे उसके तुरन्त बाद विकिरण योग से नष्ट हो जाते थे। कुछ समय बाद जब तापमान और गिरा (100 करोड़ डिग्री के नीचे) तब ड्यूटेरियम नाभिक स्थिर हो गये। हाइड्रोजन का जलना (अध्याय 14) अब शुरू हो जाता है और बाकी के न्यक्लीयान (प्रोटान और न्यूट्रान) बंध कर ऐल्फा कण (हीलियम नाभिक) बनाते हैं। इस प्रकार ब्रह्मांड में अब उपस्थित विकिरण में प्रोटान और ऐल्फा कण के साथ इलेक्ट्रान, न्यूट्रीनों और ऐंटीन्यूट्रीनो भी हैं। ऐल्फा कण में उपस्थित न्यूट्रान स्थायी रहते हैं। प्रोटान और न्यूट्रान की संख्या का अनुपात 3:1 उस समय से आज तक वही बना हुआ है। इस चरण के 10 लाख वर्ष बाद इलेक्ट्रान, प्रोटान और अल्फा नाभिक से मिलकर हाइड्रोजन और हीलियम परमाणु बने। इसके साथ ही विकिरण प्रधान महाकल्प का अंत हुआ।

जैसा कि हमने देखा मानक महाकल्प के समय ब्रह्मांड के विकास को समझने के लिए इलेक्ट्रान-पाजिट्रान युग्म सृष्टि की परिघटना अत्यंत आवश्यक है। प्रोटान और न्यूट्रान, इलेक्ट्रान से करीब 2000 गुना अधिक भारी हैं और उनके युग्म (प्रोटान-ऐंटीप्रोटान, न्यूट्रान-ऐंटिन्यूट्रान) को बनाने के लिए विकिरण को बहुत अधिक तापमान (10^{13} डिग्री) चाहिए। यहां कुछ और कणों के सम्बन्ध में भी कुछ कहना आवश्यक होगा जैसे म्यूयान इलेक्ट्रान से 200 गुना भारी है और पायान इलेक्ट्रान से 300 गुना भारी है। म्यूयान-ऐंटीम्यूयान और पायान-पायान युग्म बनाने के लिए 10^{12} डिग्री ताप होना चाहिए। यह स्थिति मानक महाकल्प से थोड़ा पहले आती है। इसलिए मानक महाकल्प में अनेकों अन्योन्य क्रियाएँ (interactions)

से प्रोटान-ऐंटीप्रोटान, न्यूट्रान-ऐंटीन्यूट्रान, पायान-पायान, इत्यादि होती
जो भौतिकी को बहुत कठिन बना देती हैं। ये अन्योन्य क्रियाएँ बहुत
टिल हैं और अभी तक इनके विषय में पूर्ण ज्ञान उपलब्ध नहीं है। फिर भी
ज्ञानिकों ने मानक महाकल्प की पूर्व की स्थिति के विषय में जो परिकल्पना
। है उसका हम थोड़ा जिक्र करेंगे। इसके लिए मूलकण भौतिकी
lementary particle physics) के विषय में कुछ और बताना आवश्यक
गा।

परमाणु, विद्युत चुम्बकीय अन्योन्य क्रिया द्वारा आपस में बंधे रहते हैं।
धनात्मक आवेश वाले नाभिकों और ऋणात्मक आवेश वाले इलेक्ट्रानों
आकर्षण से आपस में बंधे रहते हैं। यह आकर्षण बल, इलेक्ट्रान एवं
टान के बीच लगातार होने वाले फोटान विनिमय से उत्पन्न होता है।

इसी तरह दुर्बल अन्योन्य क्रिया (Weak interaction) भी किसी कण
निमय प्रक्रम द्वारा ही उत्पन्न होती है। जिन कणों का विनिमय होता है
न्हें W तथा Z बोसान कहते हैं। उदाहरण के लिए न्यूट्रान का क्षय
ाध्याय 14 देखें) भी एक दुर्बल अन्योन्य क्रिया है जो दो चरणों में पूरी
ती है :

$$n \rightarrow p + W \qquad\qquad W \rightarrow e + \nu$$

अब्दुस सलाम और एच. वाइनबर्ग (1967) के सिद्धांत के अनुसार
द्युत चुंबकीय और दुर्बल अन्योन्य क्रियाएें एक ही क्रिया के दो रूप हैं।
च्च ऊर्जा पर Z और W बोसान का द्रव्यमान (फोटान की तरह) शून्य
ता है। इस उच्च ऊर्जा पर विद्युत चुंबकीय और दुर्बल अन्योन्य क्रियाओं
समानता पाई जायेगी। यह स्थिति ब्रह्मांड के विकास के प्रारंभ के क्षणों
. 10^{15} डिग्री से ज्यादा ताप पर (लगभग 10^{-11} सेंकड सृष्टि के आरम्भ के

बाद) की होगी जब ब्रह्मांड का ताप इससे नीचे गिरता है, तब मध्यवर्ती Z और W बोसान एक प्रतिक्रिया द्वारा द्रव्यमान वाले हो जाते हैं (इनका यह द्रव्यमान इलेक्ट्रान से 10^4 गुना ज्यादा है)। इस प्रतिक्रिया को हिग्स विधि (Higgs mechanism) कहते हैं। जब यह स्थिति आती है तो हमारा ब्रह्मांड एक प्रावस्था संक्रमण (phase transition) से गुज़रता है। यह संक्रमण उसी तरह है जैसे लोहे का टुकड़ा चुंबक बन जाता है या पानी जम कर बर्फ बन जाता है। ऐसे संक्रमण के कारण ब्रह्मांड की प्रसार गति में बहुत वृद्धि हो जाती है।

प्रबल अन्योन्य क्रिया (Strong interaction) वह बल है जिससे परमाणु नाभिक बंधें रहते हैं। यह एक जटिल बल है, जिसमें मेसान का विनिमय न्यूक्लियान (प्रोटान और न्यूट्रान) के बीच होता है।

लेकिन आधुनिक विचार से न्यूक्लियान और मेसान प्राथमिक कण नहीं माने जाते हैं। ये क्वार्क (quarks) से बने हैं। एक मेसान, एक क्वार्क और एक ऐंटीक्वार्क से बनता है और एक न्यूक्लियान, तीन क्वार्क से बनता है। न्यूक्लियान और पाई मेसान अपने परिवार के सबसे हल्के कण हैं। इस परिवार के सभी कण प्रबल अन्योन्य क्रिया में भाग लेते हैं। इसलिए इन कणों का नाम हेड्रान (Hadron) भी पड़ा। ये हेड्रान जिस बल से बंधे हैं वह ग्लुआन (Gluon) के विनिमय से (क्वार्क के बीच जिनसे हेड्रान बना है)होता है। इस बल की एक विशेषता यह है कि जब क्वार्क एक दूसरे के बहुत ही समीप होते हैं तब अभिक्रिया दुर्बल होती है लेकिन थोड़ी दूर हटाने पर यह अत्यंत प्रबल हो जाती है। इससे पता चलता है कि क्वार्क और ऐंटीक्वार्क आसानी से हेड्रान के अंदर विचरण करते हैं। लेकिन स्वतन्त्र क्वार्क हेड्रान के बाहर नहीं रह सकता। इसका कारण है कि जो ऊर्जा हेड्रान को तोड़ने के लिए पर्याप्त हैं वही क्वार्क एवं एन्टीक्वार्क युग्म बनाने के लिए भी पर्याप्त

हैं। इसलिए हेड्रान टूटकर दूसरे हेड्रान बन जाते हैं लेकिन स्वतंत्र क्वार्क नहीं निकल पाते।

ब्रह्मांड के जन्म के समय क्वार्क सिद्धांत का महत्व है। **मानक महाकल्प** के पूर्व **हेड्रान महाकल्प** रहा होगा। उस समय ब्रह्मांड प्रोटान, न्यूट्रान, ऐंटीप्रोटान, ऐन्टीन्यूट्रान, पायान्स से भरा होगा और ये एक दूसरे से प्रबल अन्योन्य क्रिया से क्रियाशील होंगे। इससे भी कुछ पूर्व, इनका घनत्व इतना अधिक होगा कि हेड्रान पर बहुत दबाव पड़ रहा होगा जिसके कारण वे अलग स्वतंत्रता से रह सकते होंगे। उनका वियोजन होकर एक क्वार्क और ऐंटीक्वार्क का सागर बन गया होगा। पर ये इतने करीब होंगे कि एक दूसरे से उनकी अभिक्रिया (ग्लुयान के विनिमय से) दुर्बल होगी। इस "क्वार्क सूप" में और भी कण होंगे जैसे इलेक्ट्रान, म्यूयान, न्यूट्रीनो (मिलकर नाम लेप्टान) और उनके ऐंटीकण, और फोटान।

सलाम-वाइनबर्ग सिद्धांत ने सफलतापूर्वक विद्युत चुम्बकीय और दुर्बल अन्योन्य क्रियाओं को मिलाकर एक विद्युत क्षीण अन्योन्य क्रिया बनाई। यह संभव है कि विद्युत क्षीण अन्योन्य क्रिया और क्वार्क ग्लुयान अन्योन्य क्रिया (प्रबल अन्योन्य क्रिया का स्रोत) दोनों किसी एक बल के दो रूप हों। इनके एकीकरण के लिए कई प्रस्ताव आए हैं। इन्हें ग्रेंड यूनीफाईड थियोरीज़ (Grand Unified Theories—GUT) कहते हैं।

इन प्रस्तावों में से कोई भी सलाम-वाइनबर्ग सिद्धांत के जैसा सफल नहीं हुआ है। फिर भी सभी यही संकेत देते हैं कि एकीकरण बहुत ऊँचे ऊर्जा स्केल पर होगा (जैसे तापमान 10^{28} डिग्री जो ब्रह्मांड के जन्म के 10^{-33} सेंकड बाद उपलब्ध होगा)। एक सही एकीकृत सिद्धांत हमारी प्रारंभिक ब्रह्मांड के विषय में जानकारी को थोड़ा और पीछे 10^{-43} सेकेंड ढकेल सकती है। जब तापमान 10^{32} डिग्री होगा। इस तापमान पर कणों की ऊर्जा

इतनी अधिक होगी कि उनके बीच गुरुत्व बल और दूसरे बलों के समान प्रबल होगा। 10^{-43} सेकेंड से पहले क्या स्थिति है, हमें कुछ मालूम नहीं क्योंकि अभी हमारी समझ में यह नहीं आया है कि गुरुत्व बल, दूसरे बलों से किस प्रकार संबंधित है। हमें ऐसे सिद्धांत की आवश्यकता है जो सभी बलों को (गुरुत्व को भी) एकीकृत करें। अभी तक ऐसा संभव नहीं हुआ है। इसके पहले एक और समस्या का सामना करना होगा कि जो गुरुत्व सिद्धांत हमारे सामने है (आइंस्टाइन का जनरल रिलेटिविटी सिद्धांत)वह ब्रह्मांड के बनते समय (जब घनत्व और तापमान बहुत ऊँचा था) लागू नहीं होगा। गुरुत्व नियम में थोड़ा भी अंतर होने पर ब्रह्मांड के आरंभ के क्षणों में क्या स्थिति होगी काफी अंतर पैदा कर सकता है। हमारा हाल का अनुसंधान (1984-1986 बंगलोर में, के.पी. सिंहा और उनके सहयोगी ई.ए. लार्ड, बी.एस. सत्यप्रकाश और पी. गोस्वामी द्वारा) आइंस्टाइन के सिद्धांत में एक प्राकृतिक रूपांतर लाया है। इसमें एक क्रांतिक (critical) ताप के ऊपर (या क्रांतिक त्रिज्या के नीचे) ऐसी स्थिति रूपांतरित होती है कि गुरुत्व (अभिक्रिया) स्थिरांक का चिन्ह बदल जाता है। इससे पता चलता है कि ब्रह्मांड के आरंभ में गुरुत्व बल प्रतिकर्षी था, आज के जैसे आकर्षक नहीं। आइंस्टाइन के सिद्धांत में सबसे बड़ी समस्या ब्रह्मांड का आरंभ एक बिंदु से होना है, जिस समय, घनत्व और तापमान अनंत हैं। ऐसी अवस्था में कोई विज्ञान शास्त्र और नियम शेष नहीं रह जाएंगे। अगर गुरुत्व प्रतिकर्षी हो जाता है तब हो सकता है कि घनत्व और ताप का एक उच्चतम मान हो और शुरुआत बिग बैंग से न हो बल्कि एक प्रारंभिक संकुचन अवस्था के अंत में होने वाले उच्छलन से हो। इसके बाद प्रसार होने लगता है और गुरुत्व, आकर्षण बल का रूप ले लेता है।

यह बड़े अचम्भे की बात है कि ब्रह्मांड शास्त्र जो पदार्थ का बड़े

पैमाने पर अध्ययन है, अब छोटे अणु के अध्ययन से संबंधित हो गया है। ब्रह्मांड के पूर्व क्षण में न केवल सभी नियमों का एकीकरण होता है बल्कि बड़े और छोटे पैमाने भी मिल जाते हैं। ब्रह्मांड की सृष्टि, कणों का रहस्य और जीवन की उत्पत्ति, यह सभी विज्ञान के सीमांतक क्षेत्र हैं। शायद इन सभी प्रश्नों के उत्तर संबंधित हैं। हाल की खोज (1985-86) से पता चलता है कि ब्रह्मांड में पदार्थ का वितरण (100 पारसेक स्केल पर) थोड़ा विषमदेशिक (anisotropic) है। इससे संकेत मिलता है कि ब्रह्मांड किसी समय क्रांतिक अवस्था से गुज़रा होगा। इससे पदार्थ वितरण झागदार (frothy) है।

रूस के वैज्ञानिक ए.डी. लिंडे ने (1986) अस्तव्यस्त स्फीति (chaotic inflation) का सुझाव दिया है। यह स्फीति सदा चलती रहती है। इसमें ब्रह्मांड की सृष्टि और पुनरुत्पादन निरंतर होता रहता है। इसमें ब्रह्मांड कई भागों में विभाजित हो जाता है। हर एक भाग एक छोटा ब्रह्मांड जैसा है और उसकी स्फीति होती रहती है। हम किसी एक छोटे ब्रह्मांड में रहते हैं जो दूसरों से काफी अंतर रखता है। इस माडल में भी आदि और अंत का कोई अर्थ नहीं है। लेकिन इस दिशा में अभी और अनुसंधान की आवश्यकता है।

While the iron hand of the new universal authority was crushing local traditions and forcing the unwilling empire to conform to the revolutionary pattern of the new state, the policy of the Emperor was bitterly resented by that class which had suffered nothing but ruin and degradation from these changes. The *chun tzŭ* of the conquered kingdoms were unanimously opposed to the Ch'in Empire and the centralised state The overthrow of the feudal courts had deprived them of their hereditary authority, their influence, and of much of their wealth Ch'in officials, directly responsible to the throne, ruled in the former capitals of the princes. They did not require the services of the provincial aristocracy, a class which they rightly suspected of being the enemies of their master The imperial Court was filled with revolutionary ministers and officials, who conferred their patronage on men of similar opinions Although there were not less than seventy "Scholars of Great Learning" attached to the Court, they were hardly employed, and their advice was neither sought nor followed.

The Emperor and the Court were well aware of the strength and danger of this opposition Immediately after the conquest and pacification of the empire, he caused 120,000 families of the aristocracy, collected from all parts of China, to be transported to Shensi, thus at a blow destroying the ancient landed power of the noble clans This vast transportation, which ruined the influence of the noble clans in their hereditary lands, was a staggering blow from which feudal society never recovered. It is noteworthy that many of the leaders of the great revolt were men of the people, and this leadership could only be the result of the absence of the local aristocracy, who were the bitterest enemies of the Ch'in Empire.

The anti-feudal attitude of the Court has been made perfectly plain by the record of the great discussion on the question of re-establishing feudal kingdoms for the profit of the Ch'in princes. Ssŭ-ma Ch'ien, the Han historian, has preserved the speeches of the protagonists, which if perhaps touched up by literary artifice, nevertheless truly represent the arguments advanced. One of the conservative ministers urged this re-establishment of feudal states:

> "The kings have recently been destroyed, but the lands of Yen [Hopei] Ch'i [Shantung] and Ch'u [the Yangtze Valley] are very far away Unless kings are set up in these countries there will be no means of assuring their fidelity and obedience. It is suggested that the sons of the Emperor be made kings in these countries."

Li Ssŭ, the most revolutionary of Shih Huang Ti's ministers, held very different views. He replied:

> "The Kings Wên and Wu of the Chou dynasty [the founders] gave fiefs to their sons and brothers in great numbers. In the course of time, these close relations being dead, the branches divided and the relationship grew distant Then the kings attacked each other as enemies and destroyed themselves in war, while the Son of Heaven could not control them. Now all within the four seas, thanks to the divine genius of Your Majesty, has been reduced in a uniform manner to prefectures and military districts The sons of the imperial family and all meritorious subjects have been amply rewarded with titles, pensions from the taxes, and customs duties. That is quite sufficient The empire will be easy to govern if the present arrangement is not disturbed. To establish kings would not be advantageous"

Shih Huang Ti approved Li Ssŭ's view in these words:

> "If the whole empire has suffered and has been the prey of wars and rivalry which destroyed peace, it is because there were nobles and kings Thanks to the aid of my ancestors the empire has been re-established. If new kings are set up, wars will break out again and the present tranquillity will be disturbed. Would not this be disastrous?"

The decision of the Court against any re-establishment of feudalism increased the animosity of the *chun tzŭ* The School of Confucius, which appears to have already become the most widespread of the "Hundred Schools," furnished the bitterest critics of the imperial régime. Confucius had lived when the feudal age still stood intact. His teaching was designed for the world as he

knew it. Living in an age when feudal obligations were growing lax and the old chivalry giving way to the brutal methods of a period of intense strife, the aristocrat of Lu had striven to recall his contemporaries to half-forgotten duties and the ritual obligations of the golden age of feudal society. He turned back to the past for examples of true virtue To rebuke the growing disorder of his own day he painted, perhaps in too ideal colours, the perfect era of harmony and mutual respect which tradition alleged to have flourished under the sage rulers of the earliest time, and to have been revived by Wu, the founder of the Chou dynasty.

Since Confucius himself had never known a centralised empire, his writings did not expressly condemn such a state, but as they lauded the early feudal age as the era of true virtue and justice, his followers considered that the authority of the sage could be invoked to justify the past, and condemn the changes which Shih Huang Ti had made. Moreover, these critics, who constantly cited the literature of the past, were not slow to point out that the state of Ch'in appeared in these old books in the unfavourable light of a semi-barbarous kingdom. In the *Ch'un Ch'iu* period (722-481 B.C.) the "land within the passes" (the modern Shensi province) had hardly been considered part of the Middle Kingdom. It was impossible that changes inaugurated by these rude men from the west could be preferred to the divinely sanctioned system set up by the hero-sages of the past.

Li Ssŭ, Shih Huang Ti's minister, and the most ardent revolutionary at the imperial Court, saw the danger of this insidious propaganda. With education in the hands of the enemies of the régime, and the instruction which they imparted based on a literature wholly hostile to the new order, the forces of reaction, though beaten on the battlefield, had still a dangerous weapon with which to attack the new empire. He decided that the revolution must go a step further. It was not enough to destroy feudalism. Even the memory of the past must be rooted out, history itself must be abolished, and the enemies of the state silenced. The occasion for this step was offered by the conservatives themselves, who made one more fruitless petition for the re-establishment of feudal fiefs under the princes of the house of Ch'in. Then Li

Ssŭ proposed his famous plan to burn the books, which has earned him the undying hatred of subsequent generations of scholars. He said

"The Five Emperors* did not copy each other, the three dynasties [Hsia, Shang and Chou] did not imitate their predecessors. Each had its particular form of government. It was not that they were opposed to the methods of their forerunners, but that times had changed. Now Your Majesty is the first to accomplish a great achievement He has founded a glory which will endure for ten thousand ages. This is what narrow scholars cannot understand. Moreover, the matters about which Shun-yu has spoken† concern the three dynasties Why should we take them as a model? Formerly the princes were continually at war. They esteemed the wandering scholars and sought their advice. Now the empire has been pacified. Laws and commands emanate from a single authority. The common people are engaged in industry and agriculture, the superior classes study law and the methods of administration. Nevertheless the scholar nobles [*chun tzŭ*] do not conduct themselves in the new way, but study the past in order to defame the present. They cause doubt and trouble among the black haired people [the Chinese]. The Counsellor, your subject, Li Ssŭ, not disguising from himself that he merits death‡ advises: in the past the empire was troubled and divided No one could succeed in uniting it. Thus the princes reigned simultaneously. In their discussions the scholars speak of ancient times in order to decry the present. They use false examples to stir up confusion in the actual state of affairs, they proclaim the excellence of the doctrines they have studied to abuse what Your Majesty has established. Now that the Emperor possesses the whole land and has imposed unity, they

*The five legendary emperors who preceded the Hsia dynasty, Huang Ti, Chuan Hsiu, K'u, Yao and Shun.

†Shun-yu Yueh, a conservative minister, had just proposed the re-establishment of feudal fiefs, basing his argument on the fact that such fiefs had always existed under the preceding dynasties

‡A formula of respect used when offering advice, which, in theory, might be displeasing to the sovereign and so justify the death of him who offered it.

honour the past and hold private consultations. These men who oppose the new laws and commands, as soon as they hear of a new edict, discuss it in accordance with their doctrines When they are at Court they conceal their resentment, but when they are elsewhere they debate these matters in the public streets and encourage the common people to believe calumnies. This being the case, unless we take action the authority of the sovereign will be abased, the associations of the malcontents will grow powerful. It is necessary to prevent this. Your subject proposes that the histories [of the feudal states], with the exception of that of Ch'in, shall all be burnt. With the exception of those holding the rank of 'Scholars of Great Learning,'* all men in the entire empire who possess copies of the *Shu Ching*, the *Shih Ching*, and the works of the Hundred Schools, must all take these books to the magistrates to be burnt. Those who dare to discuss and comment the *Shu Ching* and *Shih Ching* shall be put to death and their bodies exposed in the market place Those who praise ancient institutions to decry the present régime shall be exterminated with all the members of their families. Officials who condone breaches of this law shall themselves be implicated in the crime. Thirty days after the publication of this decree, all who have not burnt their books will be branded and sent to forced labour on the Great Wall Those books which shall be permitted are only those which treat of medicine, divination, agriculture and arboriculture. As for those who wish to study law and administration,† let them take the governing officials as their masters."

The decree, as drafted by Li Ssŭ, was "approved."

Such was the cause of the famous burning of the books, a catastrophe which has left irreparable gaps in the history of ancient China, and almost destroyed the philosophical writings of the Hundred Schools. The heroic courage of scholars who

*There were seventy of these scholars. Judging from the great difficulty later experienced in finding copies of the ancient books, these scholars do not seem to have availed themselves of their privilege, or else their libraries perished in the turmoil of the great revolt.

†In certain editions of the *Shih Chi* the two words "law and administration" (*fa ling*) are omitted.

defied the decree did indeed preserve the essential skeleton of the ancient literature. Particularly the works of the Confucian school escaped annihilation, and this fact alone goes far to prove that that school had already by far the greatest number of disciples For a time the ancient literature entirely vanished. Much was burnt, the rest hidden in walls and tombs, often to be forgotten in the tumults of succeeding years. The decree was ruthlessly enforced during the duration of the Ch'in dynasty, and no less than 460 scholars were put to death for concealing their books.

Li Ssŭ's purpose was accomplished. The burning of the books, and the proscription of all ancient teaching and history broke the power and influence of the *chün tzŭ*, already shattered by the transportations and suppression of the fiefs. Though his legislation did not succeed in establishing the Ch'in dynasty on an enduring basis, it did destroy even the memory of the ancient institutions. When, under the Han dynasty, the ancient literature was painfully collected and reassembled from fragments and the retentive memories of aged men, it had ceased to be the expression of a living political and social system Within less than a hundred years the historian and scholar Ssŭ-ma Ch'ien himself no longer clearly understood the difference between the names of the noble clans and the surnames of the families into which they had divided. He constantly confuses the meaning of the ancient words for clan and family * Yet this distinction was of the first importance in feudal times, when only a limited number of noble clans had any part in the political life of the states. So completely had the aristocracy lost caste and position at the end of the revolution, that a scholar and conservative no longer clearly understood the fact that their ancient privileges had been founded on noble descent and not on education.

The burning of the books ruined the last hopes of the feudal party It also weakened the Ch'in dynasty itself. With the exception of the official class in Ch'in, the nobility of the entire empire was now united in hatred and hostility to the imperial régime. Moreover, the opposition now spread to classes which had

*This significant fact was pointed out by the great French scholar E. Chavannes in his translation of the works of Ssŭ-ma Ch'ien. Chavannes. *Les Memoires historiques de Se-Ma T'sien.* Paris, 1895, Vol. 1, page 1, note 3.

hitherto taken no interest in political questions. The ruin of the aristocracy, to whose rule they had been accustomed, exposed the peasantry to the cruel weight of the Ch'in despotism, its ruinous taxation, and its incessant forced labour. Local customs were trodden under foot Strangers from the west ground down the provinces with merciless disregard for the sufferings of the people.

The people, though misruled in the period of the Warring States, and ready to welcome any relief, now found that they had changed King Log for King Stork. Their old princes they had known and respected with a hoary tradition of loyalty. The new rulers were military officers from Ch'in who treated the eastern provinces as a conquered land. Thus when the *chün tzŭ* preached revolt the peasantry were willing to listen. Crimes and brigandage rose like a tide. The Emperor, aloof and mysterious, confided in his revolutionary ministers and ignored all discontent.

From the moment of his accession to the position of sole and supreme autocrat Shih Huang Ti surrounded himself with a mystery and pomp, which, though intended to enhance his prestige, in reality concealed from the sovereign the consequences of his decrees He had abandoned the ancient royal title to assume the new and imposing style of Huang Ti, which is translated as Emperor. The Chou Sons of Heaven had been content with the title of King Only the semi-divine legendary heroes of the past had been styled Huang Ti. The new title was thus to the men of that age equivalent to a mark of divinity The Emperor lived and worked in the most carefully guarded secrecy. When he travelled, it was a crime, instantly punished with death, to reveal his movements In the vast palaces which he constructed at Hsien Yang he moved secretly from one apartment to another, only a handful of eunuchs knowing where he was to be found. So secret was his life, that when he died, journeying in the eastern provinces, not even the imperial cortège was aware of the fact, and the strange procession travelled across the length of China, to the capital, with the dead Emperor's body, the secret only known to five or six eunuchs and the minister Li Ssŭ. As the weather was summer, and the corpse became decomposed, it was found necessary to place a quantity of rancid salt fish on a cart which followed the

imperial chariot, lest the soldiers and attendants should suspect that the sovereign was dead.

There was another reason for concealing the death of the great conqueror. The Crown Prince was known to be an opponent of the extreme measures which Li Ssŭ had taken against the scholars. He had protested against the burning of the books, and in consequence had been ordered to leave the Court, to reside with the army of the north which guarded the Great Wall against the incursions of the nomad Huns (Hsiung Nu). Li Ssŭ and the chief eunuch Chao Kao feared, with reason, that if the Prince succeeded his father, they would be dismissed and probably put to death. If the death of the Emperor became known, the Prince with the army of the north could march on Hsien Yang long before the ministers could reach the capital. Accordingly they suppressed the sealed letter by which Shih Huang Ti had declared the Crown Prince to be his successor. In its place they sent a secret forged decree ordering the Crown Prince and Mêng T'ien, general in command in the north, to commit suicide. The deception was not discovered, and the Prince and Mêng T'ien perished. This general was the most famous of the Ch'in commanders, to whom the final victory over the feudal states was largely due. Li Ssŭ and the eunuch Chao Kao then placed Shih Huang Ti's second son on the throne. He reigned, in accordance with his father's wish, as Er Shih Huang Ti, "The Second Emperor."

This palace intrigue, made possible by Shih Huang Ti's secret mode of life, was fatal to the Ch'in dynasty. The new ruler was a youth of twenty-one, without experience or capacity. He entrusted all authority to Chao Kao. The all-powerful eunuch, fearing the authority of the generals and ministers, dismissed the most capable and trusted of Shih Huang Ti's officials and substituted his own creatures. The taxation was increased, the severity of the laws enhanced, exiles and convicts multiplied. Through jealousy or fear, even the princes of the imperial house were not spared. Li Ssŭ himself fell victim to the rivalry of his eunuch colleague and perished under the torturers' hands.

The downfall of the Ch'in dynasty, which occurred before the Second Emperor had been three years on the throne, provoked a Han scholar, Chia I, to compose one of the most remarkable

and penetrating political documents of the ancient world. The "Faults of Ch'in" (*Kuo Ch'in Lun*) has been preserved in the work of the Han historian Ssŭ-ma Ch'ien (145-86 B.C.), who lived some years after Chia I. The author of this dissertation was a scholar, and therefore a conservative; he regrets the feudal age, but cannot deny the chaos which preceded the Ch'in dynasty. Then he discusses the great opportunity which came to Shih Huang Ti by virtue of his conquests and the natural strength of his ancestral kingdom, for Chia I, unlike so many Chinese scholars, had an eye for strategy. Then he exposes the condition of the empire under the Ch'in rule and the causes of the great revolt. Chia I, who lived from 198 to 165 B.C., was almost a contemporary of the great revolution and certainly had talked with men who remembered the Ch'in times:

"When Ch'in faced south and ruled over the empire there was once more a Son of Heaven. Immediately the innumerable multitude of the people began to hope for the peace to which they are inclined by nature. There was not one that did not give Ch'in their allegiance and regard him with respect. In this was the true principle of security, of enduring glory and the elimination of danger. But the King of Ch'in was of a base and greedy character. He relied upon his own judgment, did not trust ministers of proved ability, and was not willing to conciliate the nobility and the people. He multiplied the tortures and made the punishments more terrible. His officers governed with the greatest severity. The rewards and penalties were unjust. The taxes and levies were unbearable. The empire was crushed under forced labour, the officials could not maintain order, the hundred families [the people] were in the last extremity of misery, and the sovereign had no pity for them and gave them no help. Then crime broke out in every place and the Emperor and his subjects deceived each other mutually. The condemned were an innumerable multitude; those who had been tortured and mutilated formed a long procession on the roads [on their way to exile]. From the princes and ministers down to the humblest people every one was terrified and in fear for their lives. No man felt secure in his office, all were easily degraded.

"So Ch'ên Shê, without needing to be a sage like T'ang or Wu [founders of the Shang and Chou dynasties], without having any high rank such as Duke or Marquis, had only to wave his arms for the whole empire to answer like an echo.

"When a man has the rank of Son of Heaven, and all the wealth of the empire as his riches, and yet cannot escape being massacred, it is because he has failed to distinguish between the means by which power is safeguarded and the causes which lead to disaster."

Before Er Shih Huang Ti had been four years on the throne he had indeed ruined not only his father's life's work, but fatally jeopardised the heritage transmitted by all the preceding Kings of Ch'in. In the year 209 B C, before Shih Huang Ti had been in his tomb a year, a common soldier in the country of Ch'u (Hupei) persuaded his comrades to mutiny, and started the great revolt. Ch'ên Shê, as Chia I is at pains to recall, was neither a scion of some fallen royal house nor even a member of the aristocracy. He was a man of the people, poor and entirely unknown. Yet the empire "answered him like the echo." As if at a preconcerted signal, though in reality each revolt was a spontaneous expression of the universal despair, the whole of the "land outside the passes" —eastern and southern China—rose in revolt. The leaders of the rebellions were for the most part adventurers, but at first they secured popular support by restoring the old feudal kingdoms Obscure descendants of the old royal families were sought out in their hiding places and proclaimed Kings of Ch'u, Han, Wei, Chao and Ch'i.

Although the Ch'in generals, whose troops were well armed, succeeded in suppressing the first risings, others broke out immediately, and proved far more formidable. The rebel leaders made a convention dividing the empire between them. In the last month of 207 B C. the future founder of the Han dynasty, Liu Pang, advanced unopposed on Hsien Yang and received the surrender of the Ch'in capital. Er Shih Huang Ti had already perished at the hands of the eunuch Chao Kao. His successor, who reigned only forty-three days, having surrendered to Liu Pang and abdicated the throne, was a few months later put to

death with all his family by Hsiang Yü, the leader of the rebel confederacy.

Although the rebels had begun by restoring the old royal families, and even accorded the title of Son of Heaven to the restored King of Ch'u, all power and authority really remained with the generals, adventurers of obscure origin. The most powerful of these military leaders was Hsiang Yü, who, unlike the majority of his colleagues, was of aristocratic origin, descendant of a noble family of Ch'u who had held the hereditary rank of general in the old kingdom.

While Liu Pang had captured undefended Hsien Yang, his superior and chief rival, Hsiang Yü, had defeated the great army which was the last hope of the Ch'in dynasty. Supreme in eastern China as a result of this victory, Hsiang Yu proceeded to impose a new political system on the lands which had been freed from Ch'in tyranny The old kingdoms were restored, but with a diminished area, for large territories had to be given to the powerful adventurers who commanded the armies. Thus, not merely the seven old kingdoms were reconstituted, but a large number of new artificial states were created at their expense. Ch'in was divided into three parts and awarded to the Ch'in generals who had surrendered to the rebels. The future founder of the Han dynasty received as his portion the country now known as Szechuan and southern Shensi, which received the name of Han from the river which waters it. Hsiang Yu himself assumed the title of Pa Wang, the Hegemon King, and distributed the territories of the east to his generals and companions.

This attempt to revive the feudal system was a failure from the very beginning. Hsiang Yu speedily got rid of the nominal Ch'u Emperor His generals, dissatisfied with their portion of the spoils of Ch'in, attacked and despoiled the restored scions of the ancient royal families. Liu Pang dispossessed the three new Kings of Ch'in and made himself supreme in the "land within the passes" The new feudal system broke down completely, and at once; there ensued a furious and ruthless war between the former allies.

No more striking proof of the thoroughness of Shih Huang Ti's revolution can be adduced than the utter failure of his enemies when the hour of reaction gave them their chance to restore the

old system. Ch'in was destroyed, divided and humbled. No better opportunity could be asked for; if the feudal system was the true solution for the troubles of the state, it had now a fresh lease of life, but it collapsed at once. The ancient royal families had lost all prestige, and they were dethroned by adventurers The new kings were not attached to their dominions by any ties of blood or established loyalties. They attacked and despoiled each other without any regard for the sanctity of treaties and alliances. In less than a year the new settlement had been destroyed, and the struggle developed into an undisguised contest to restore the unified empire for the profit of the strongest military chieftain. This war, between Liu Pang in the west and Hsiang Yü, who controlled the eastern provinces, ended five years later in the complete triumph of the former, and the foundation of the Han dynasty.

The Chinese have delighted, in history, in romance, and in drama, to relate the story of this famous war, emphasising the strong contrasts in character which marked the rival leaders. This contrast has more than a dramatic significance The contest was one of the new and the old, the ideal of the unified state, and the ideal of feudalism, the struggle between the peasant adventurer and the aristocrat Liu Pang had all the qualities and defects of his class in an exceptional degree. He was shrewd and cautious, an excellent judge of men, jovial and good natured, but he was not accustomed to courtly manners and cared little for chivalrous traditions He understood his own class, the people, and, being unhampered by an education in outworn ideas, he judged a situation in terms of reality. In the field he was neither conspicuously brave nor very successful He was more often beaten than victorious in pitched battles, but he never lost a campaign He was a consummate politician.

Hsiang Yu was an aristocrat as typical of his class, the ruined *chun tzŭ*, as Liu Pang, product of the great revolution The Hegemon King was a man of exceptional physique, very tall and of enormous muscular strength. Educated in the traditional culture, he was a poet, a courteous and polished gentleman, a brave and intrepid fighter; the terror of his enemies. He never lost a pitched battle until the very end of his career, but he never

profited by his victories. He was arrogant and cruel. His temper was uncontrollable, and led him to commit excesses for which he repented too late. He alienated his allies and generals by his pride and ambition He had no political programme other than the restoration of a discredited feudalism, which he himself was not prepared to support when its restrictions ran counter to his ambition.

Ultimately, after five years of fluctuating fortune, Hsiang Yü found himself surrounded by his enemies, their numbers swollen by his own former followers, now won over by the political skill of his peasant adversary The last scene of this memorable struggle is thus described by the Han historian*:

"At night Hsiang Yu heard on all sides men singing the songs of Ch'u [his own countrymen, now in his enemy's camp]. He was greatly alarmed, and exclaimed· 'Has Han gained all the people of Ch'u?' Then the King rose and spent the night drinking in his tent He had a beautiful wife named Yu, and a superb horse named Ch'ui, which he always rode. The King sang sadly of his sorrows. He composed these verses:

My strength uprooted the mountains,
My force dominated the world.
Fortune no longer favours me.
Ch'ui can gallop no more.
If Ch'ui can gallop no more
What can I accomplish?
Yu, Yu, what will be your fate?'

"The King and Queen Yu sang many stanzas together. The King wept, and his attendants could not restrain their tears. Not one of them could lift his head and look upon the King."

Hsiang Yu, after cutting his way out through the besieging army, perished by his own hand, when capture was inevitable, on the banks of the river Wu near Ho Chou in Anhui The great revolution was at an end and Liu Pang, the peasant, was undisputed master of the whole empire.

*Ssŭ-ma Ch'ien, *Shih Chi*, here quoting the *Ch'u Han Ch'un Ch'iu*, a book composed by Lu Chia, who was a follower of Liu Pang and an eye-witness of the war. His book, now lost, is only known by the quotations in the *Shih Chi*

The empire which Liu Pang founded was in many respects a restoration of the Ch'in autocracy which the whole nation had combined to destroy five or six years before. Like his predecessor, Shih Huang Ti, the new Emperor, though a native of the south-east (north Kiangsu), fixed his capital in that well defended "land within the passes," Shensi, which had been the strength of the Ch'in kingdom, and which Hsiang Yü had not had the strategical insight to keep for himself. Nor, indeed, were the scholars and gentry much in favour at the new Court in the early years of the Han dynasty Liu Pang was himself a man of little education and obscure origin. It was not to be expected that he would favour the aristocratic party who so constantly advocated a return to the past. The new Emperor was clever enough to realise that though the policy of Ch'in Shih Huang Ti was the only one possible for the ruler of a unified empire, it was necessary to go about it more tactfully and gradually. He did not, therefore, condemn feudal institutions outright. He gave fiefs to his followers, but made a rule that no man who was not a member of his own family might be made a King. The new feudalism, or rather the façade of feudalism under which the Han Emperor concealed the hard fact of autocracy, was very different from the old The new kings ruled over small and diminished territories Their states formed enclaves in the midst of provinces governed by imperial officers in the Ch'in manner. They were frequently displaced, either to be given a new kingdom in some other part of the empire, or to be degraded altogether. Liu Pang with ruthless ingratitude, which was yet politically most wise, deprived his generals of the kingdoms which they had received as a reward for their services. Even Han Hsin, to whose military skill he owed the victory over Hsiang Yu, was degraded and finally put to death With few exceptions the generals who had won the victories which founded his dynasty were degraded and executed for real or alleged conspiracies

The successors of Liu Pang pursued his policy with success. The feudal princes, all members of the Liu imperial family, were supervised by officers who were directly responsible to the Emperor. They were frequently summoned to court, and degraded or displaced for the lightest faults. Finally, the clever policy of the

Emperor Hsiao Ching found a means to reduce them to complete unimportance By the decree of 144 B.C. all the sons of a feudal lord were made co-heirs of their father, and his estates divided amongst them. When any branch became extinct the state was suppressed and made an imperial prefecture Thus, when Liu Pang reigned there were 143 feudal fiefs in the empire; by the end of the Han dynasty these had been increased to 241, but they were now merely petty lordships, covering only two or three towns This policy was not carried out without checks Occasionally the emperors had to sacrifice a minister who had gone too fast, notably after the revolt of the seven chief kings of the eastern provinces in 154 B.C. But the power of the court grew steadily stronger, the importance of the feudal lords decreased with every generation After the reign of the Emperor Wu, 141-87 B C., the feudal states ceased to be of any importance and are rarely mentioned.

The disappearance of feudalism was rendered possible by the policy of the Han Emperors towards a very important and hitherto irreconcilably reactionary class, the *chun tzŭ*. The aristocracy had been virtually destroyed by the revolutionary measures of Shih Huang Ti, but they transmitted their ideals and their political outlook to a new class, the scholars and officials of the centralised empire. From this time onwards the *chun tzŭ* cease to be an hereditary nobility distinguished by membership of a limited number of clans The revolution had destroyed the territorial and clan basis of the old aristocracy for ever. The *chün tzŭ*, including many of the old aristocratic families, became a class marked off from the mass of the people by education, and only by education. While from Han times until to-day the ancient families, such as that of Confucius himself, have received a respect rarely accorded to upstarts, the true ruling class in no way depended on noble blood. The very meaning of the old terms became obscure. *Chün tzŭ* had meant the son of a lord, member of a noble clan. Under the new régime it gradually came to mean a gentleman in much the same sense as that word is used in modern English—one who had received a polite education.

The later Han Emperors adroitly favoured the new educated class. Themselves of peasant origin, with no trace of divine or

noble blood to fortify their claim to the throne, it was of vital importance to the new emperors to discover some principle of legitimacy for their power Noble blood and divine descent they could not claim; force, upon which the Ch'in had relied, had proved to be a double-edged weapon The master stroke of the Han Emperors was to enlist in support of the centralised state the very school which had upheld feudalism to the last. The successors of Liu Pang not only repealed the proscription of the books, but bestowed the imperial patronage on the followers of Confucius. The ancient literature was brought out from its hiding places and pieced together. The sages and heroes of the feudal age were honoured as never before. And yet all the time the Han Emperors undeviatingly pursued their policy which aimed at the eradication of the last vestiges of feudalism.

Their supreme achievement was to persuade the new scholar class, to whom the feudal age was personally unknown, that the doctrines of Confucius could be applied to the new political régime. The Sage of Lu had taught the obedience of sons to their parents, of the nobles to their lord, and of the lords to the Son of Heaven. The Han rulers expanded this last allegiance, and extended the scope of Confucius' aristocratic ethical code to include all subjects of the Emperor. Not only the hereditary nobility, but every man who served the state, should make his ideal the Confucian loyalty to the prince, and this prince must be none other than the Emperor himself

By this clever distortion of the ancient feudal ideal the Han Emperors made the doctrine of Confucius the strongest support of that centralised autocratic monarchy which the Sage himself had never known, and which his followers had formerly opposed to the last gasp. The triumph was complete. In time the true character of the feudal age became obscure to the scholars themselves. The past was interpreted in terms of the present, and the legend of a unified empire in remote antiquity which had later degenerated into feudalism, became widely accepted. Shih Huang Ti tried to destroy the memory of the past; the Han sovereigns, more subtle than he, succeeded in distorting it.

The interpretation of the Confucian doctrine which gained currency during the Han dynasty proved one of the most enduring

results of the revolution. The ideal of a centralised state became closely associated with the scholar class and the followers of the Confucian school Henceforward fissiparous movements are always opposed by the scholars, the very class who had defended ancient feudalism. The temporary interludes between centralised dynasties when not caused by partial foreign conquests, have always resulted from the rise to inordinate power of military chiefs, and these periods of division have been unsparingly condemned by the scholars as "ages of confusion"

Chapter VII

THE SOCIAL AND ECONOMIC REVOLUTION

THE triumph of Liu Pang and the wise policy of his successors towards the fief-holding princes established the political basis of the new centralised empire on a firm and enduring foundation, but the social and economic consequences of the great revolution were as far reaching as the political changes, and raised problems which the Han Emperors found less easy to solve Though Liu Pang and his successors pursued a consciously anti-feudal policy in their endeavour to build up the supreme power of the imperial Court, some of the results of the fall of the feudal aristocracy tended not to strengthen, but to undermine the power of the Emperor and to jeopardise the dynasty.

The ruin of the aristocracy left a gap in the social system which was too often filled by very undesirable elements. While the Han dynasty saw the beginning of a new conception of society in which education and culture rather than divine or noble descent were the marks of the ruling class, the revolution was still too recent to permit this new form of society to win general respect and recognition. Men still looked back to the feudal age, still doubted the permanence of the new empire, still secretly thought of the imperial family as upstarts. While the Han Emperors achieved the destruction of feudal traditions in the provinces, the Court, which was intended to be the central and unshakeable authority from which the whole empire took the law, was, in fact, disturbed by frequent and sanguinary palace revolutions.

These disorders were due to one of the unforeseen consequences of the revolution, the rise to great power and influence of the families allied to the Emperor by marriage. Under the feudal system this source of instability had not existed. The Chinese marriage customs, which forbade the intermarriage of members of the same clan, and therefore still more of persons with the same surname,* forced the feudal princes to seek their brides among

*This rule of exogamy was of great antiquity and formed part of the primitive organisation of the Chinese tribes in the prehistoric period. Surnames,

their social equals of another clan, and these were necessarily the princely families of other states. Thus, the family of the Queen was a foreign family, not resident in the King's state, and unable to exercise any influence on court policy. Equally the Queen herself, having no family backing in her adopted country, was negligible as a political force in internal affairs, though her influence might sometimes be exercised in foreign affairs in favour of her native country, as in 645 B.C., when the Queen of Ch'in, herself a member of the royal family of Tsin, interceded with her husband and saved the life of the captive Duke of Tsin.

Under the Han Empire a very different situation arose There was now only one sovereign family, and as the emperors could not inter-marry with the collateral branches of the imperial family—since these all bore the same surname—they were obliged to marry the daughters of their own subjects. This custom introduced a new and dangerous factor into political life. Marriage, so far from being a means to secure a profitable alliance, as in the feudal age, now tended to raise up a rival family. The empresses were chosen either for their personal charms, or to confer favour upon a deserving minister or general. Their influence in either case was a menace to the imperial house. If they owed their rank to their beauty, they persuaded the emperors to lavish favours on their own upstart relations. If their family was already distinguished in the state service, it now acquired a potent influence in the very centre of the government

As the mother of the heir the Empress was a person of the first importance. On the death of the Emperor, should her son (as was frequently the case) be still a child, she exercised the regency, and forthwith the whole imperial authority passed into the hands of her family. Her brothers or uncles occupied the highest posts and filled the administration with their clansmen and clients Since their power depended on the Empress alone, they endeavoured to prolong the regency, even when the young Emperor was of an age to govern A change of reign, or even the marriage of

which came gradually into use in the feudal period, were at first confined to the nobility, and had either a place name origin or were derived from the name of an office or rank, i e Ssŭ-ma, "commander of the horse," and Kung-sun "grandson of the duke" Persons of the same surname were therefore held to be members, however distant, of the same family.

the new Emperor, would spell the end of their influence, consequently they used the heyday of their power to amass vast wealth and form a party to sustain them in the evil hour to come

In the new revolutionary society these consort-families were no longer aristocrats with an ancient tradition of loyalty and obedience, they were upstarts whose only support was the imperial favour conferred upon the Empress Previously they had been men of no account; on the death of the Empress they would be deprived of their power, their wealth, and probably also of their lives. They were the target for every envy and jealousy. No sense of aristocratic privilege moderated their rapacity or restrained their arrogance. From the perils which menaced them at a change of reign there was but one escape, to go one step further and seize the throne itself The fatal logic of their position impelled almost every consort-family under the Han dynasty to make the attempt and, with one exception, all failed. Their history, and that of the Han Court, repeats itself with hardly any variation. The family of the Empress is rewarded with titles and high positions They seize all power, they aim at the throne, and upon the death or fall of their sole support, the Empress herself, they are ruthlessly exterminated to make way for the relatives of the new Empress.

The family of the first Han Empress, the Lu, were the first to set an example which so many of their successors followed, and the family of Wang, who first married into the imperial house in the reign of Han Yüan Ti, 49-33 B C , was the only one which gained a temporary security by usurping the throne itself. Wang Mang, the usurper, enjoyed his power for only fourteen years (A D. 9-23) The house of Han was not without support in the provinces, and after a violent civil war the throne was regained by the Emperor Kuang Wu Ti, who thereupon transferred his Court eastward to Lo Yang in Honan. This event marks the separation of the Han dynasty into two periods, which are known as the Western or Early Han dynasty (206 B.C.—A D 25), and the Eastern or Later Han dynasty (A.D. 25-221).

Palace intrigues and court revolutions due to the new power of women were not the only disturbing consequences of the social revolution. The rise of classes hitherto excluded from political

power raised other problems, intimately associated with the economic troubles of the new empire. Under the first Han ruler the old law which forbade merchants and artisans from occupying any official post was maintained Liu Pang, himself a peasant, favoured his own class. Accepting the teaching of the Legist School, he believed that agriculture was the foundation of the economic system and the only industry which should be patronised and protected by the government The need for recovery was indeed obvious enough The Han Emperor found the Chinese world in the last extremity of exhaustion and poverty The great revolution, following upon the Ch'in despotism, and the endless wastage of the period of the Warring States, had reduced the country to a condition which has been vividly described in the work of Ssŭ-ma Ch'ien. On his accession Liu Pang could not find four horses of the same colour in all his empire to draw his chariot. The highest officials employed oxen for the same purpose; as the price of a horse was 300 pounds of gold, the fact is not surprising. Rice, the staple food of the south, and the common food of the well-to-do in all parts, had risen to the fantastic price of one pound of gold for a weight equivalent to 120 lbs. It was no doubt these conditions which inspired Liu Pang's legislation against the merchant class, which he suspected of speculating and hoarding to raise prices Merchants were forbidden to wear silk, ride in carts or hold office They were also subjected to a great variety of taxes.

Liu Pang hoped to restore prosperity to the peasantry and revive the agricultural economy of the feudal age, but the effects of the revolution were as inescapable in economics as in politics Feudalism was dead, even the artificial restoration of Hsiang Yu had failed to bring it to life. Soon it became clear that the old social and economic system had perished with it. The first century of the Han Empire offers an interesting example of the efforts of a strong, and in many ways enlightened, government to cope with an economic crisis which was as unexpected as it was misunderstood.

The revolution had swept away the barriers to commerce which the wars and jealousy of the feudal princes had maintained for centuries. New territories, potentially very rich, had been

incorporated in the empire. The landowning nobility were ruined and dispersed Side by side with the sudden expansion of the empire itself there came an equally important expansion of industry and commerce, which raised up a new class of industrial magnates and millionaire merchants. The Han sovereigns had no sooner found a policy to counter the political dangers of feudalism than they were assailed by a series of economic difficulties wholly new to the experience of the Chinese world These troubles were three, and they have a familiar ring to the statesmen of the 20th century Currency depreciation, instability of prices, and the cost of defence measures.

Throughout the Early Han period the war with the nomads of the Mongolian steppe taxed the resources of the empire and complicated economic conditions. These nomads known to the Chinese as Hsiung Nu, *i e.* the Huns, were of Turki stock. Their incursions into China had begun during the period of the Warring States, and had caused Ch'in Shih Huang Ti to build the Great Wall as a measure of defence. Under the Han dynasty the struggle was continued almost uninterruptedly until 51 B.C, when the southern hordes were compelled to accept Chinese sovereignty owing to their internal dissensions. The value of the Great Wall as a defence must not be underestimated. In an age when artillery was unknown, this formidable barrier, built along the crest of a precipitous range, was an obstacle to raiding cavalry not easily overcome. The Wall as a defence had one severe disadvantage It was only effective if garrisoned, and it was immensely long, traversing a poor country which could not supply sufficient provisions for the army stationed along the frontier.

The difficulty under which the Han Emperors laboured in supplying the needs of the frontier was increased by the lack of any adequate means of transport The northern border is ill-supplied with navigable rivers, apart from the Yellow River, and as this flows southward from the mountain plateaux to the plains, the transport barges had to make their way upstream against the current when fully laden, and only benefited by the speed of the stream when returning empty The shortage of horses, which were mostly bred in Mongolia, and had to be purchased or captured from the nomads themselves, added to these difficulties.

The troubles of the frontier were not the sole cause of the economic crises, but they aggravated the disorders of the empire and drained away huge sums in a profitless expenditure. The Court, unable to meet the demand out of its ordinary resources, was compelled to devise exceptional measures Official ranks were granted to those who could arrange the transport of grain to the frontier, and this system was soon amplified by the sale of titles to supply a fund for the same purpose. Under the Emperor Hsiao Ching (157-141 B.C.) the price was lowered to attract a poorer class, and criminals were allowed to obtain a reduction of their sentences in return for arranging the transport of grain to the frontier. The fall of the aristocracy had made the court hierarchy of titles, first established by the Ch'in, attractive to that large class of newly risen men who could not claim an ancient name. The Court was quick to realise that snobbery had a value which could be turned to good account, but these measures deeply offended conservative scholars.

The Han Emperors were even less successful in dealing with the purely economic difficulties which beset them. The evil of speculation and grain hoarding by rich merchants was at first attributed to a shortage of currency, which the Emperor Hsiao Wên attempted to remedy by a most unwise decree. In 175 B.C. private minting of copper coinage was permitted, and, indeed, encouraged. The results were disastrous. The Prince of Wu, a feudal lord of a collateral branch of the house of Han, found a rich copper mine in his fief (Chekiang) and exploited this until he became "richer than the Emperor himself." Têng T'ung governor of Szechuan, did the same, and soon the whole empire was flooded with "Wu" and "Têng" coins. Other capitalists on a lesser scale added their quota with the result that prices soared, money became valueless and the revenues of the government were seriously diminished. The right of private minting was then withdrawn, but the evil had been done and illicit coining continued on a vast scale.

In spite of this debasement of the currency the reigns of the Emperors Hsiao Wên and Hsiao Ching (180-157 and 157-141 B.C.) were a period of comparative prosperity for the mass of the people, and particularly for the merchant classes who had been

more considerately treated after the death of Liu Pang. The early part of the reign of the Emperor Wu (141-87 B C.) saw this improvement maintained. Ssŭ-ma Ch'ien, who had no cause to love his sovereign, has recorded the prosperity of this time, even if he has perhaps painted the picture too rosily in order to blacken the days of trouble which were to come * No longer was there any shortage of horses On the contrary, even in the poorest streets of Ch'ang An horses were to be seen, and it was now considered ill-bred to mount a mare, indeed, respectable people would not be seen in the company of one who did so. The treasury was piled high with strings of cash, so long accumulated that the cords had rotted with age. The granaries in which the tax grain was collected were so filled with old grain that much had become rotten, and was no longer fit to eat Men peacefully occupied their fathers' official posts, undisturbed by jealous office hunters, so that the minor positions were tending to become hereditary and families were beginning to take their surnames from the posts they occupied. The merchants had grown rich and powerful, taking the place of the vanished aristocracy, these new magnates lorded over the countryside† and sometimes terrorised the people by means of gangs of paid retainers Indeed, the conduct of the rich was the dark side of the picture. Extravagance and luxury marked the court nobility as much as the provincial millionaires. None had grown so wealthy as the salt boilers and ironmasters The inland provinces of China are poorly supplied with salt, which sometimes has to be fetched great distances. The salt boilers of the coastal region had profited by this circumstance to force up the price of salt and establish a complete control of the industry. The ironmasters had also become "richer than the princes." It is probable that the working of iron was at this time greatly expanded.‡ In China the bronze age lasted very late (bronze swords and halberds were standard weapons in the early Han

*See Chapter IX in which the value of Ssŭ-ma Ch'ien's testimony for his own times is appraised

†This was an evil result of the fall of the aristocratic monopoly of land The peasants fell into debt and sold their land to money-lending merchants and speculators

‡The *Book of Lord Shang* and the *Hsun Tzu* refer to the "iron-tipped lances of Ch'u" (the southern state) made from the iron of Yuan, in Honan

period), but it is plain that now the new metal was coming into more general use, and its production had been monopolised by a few enterprising industrialists. All this wealth was so far untapped by the government, which continued to base its revenue system on the old-fashioned capitation tax and contributions of grain. Commerce and industry were only subject to various navigation taxes and market dues which were private monopolies owned by princes and fief holders.

The Emperor Wu succeeded his father when still a youth, a fact which permitted him to reign for the long space of fifty-three years, during which the civilisation of the Han period reached its apogee. The new ruler was a masterful character, well educated and fond of literature, but also ambitious, ruthless and subject to violent rages He had, however, an unprejudiced mind, and was willing to break with tradition if policy demanded it. Under an energetic and capable autocrat the Chinese Empire, rested by the peaceful rule of the earlier Han sovereigns, was ready to embark on a career of expansion at the expense of the uncivilised peoples to the south and west. In the next Chapter the influence of these foreign conquests upon Chinese culture will be reviewed. Fortunately an account of the economic crisis which developed as a result of these wars, and which completed the social revolution begun by Ch'in Shih Huang Ti, has been preserved in the Chapter "P'ing Chun" of Ssŭ-ma Ch'ien's history.

The long war with the Hsiung Nu (Huns), which broke out again in 133 B.C., necessitated enormous expenditure for the upkeep of the army and for an extension of the Great Wall to the west At the same time the campaigns in the south-west, by which Szechuan and the valley of the West River were made part of the empire, required the construction of a road through the mountains which was only accomplished at a stupendous cost, both of money and lives A third drain on the treasury was the conquest and colonisation of north-west Korea, the province called Lak Lang (128 B C.), which has in recent years yielded the most striking evidence of the high level of Han art and craftsmanship even in a remote border territory of the empire * The Emperor's measures for the relief of famine

*See Chapter X.

imposed a further burden upon the imperial treasury, already heavily depleted by the wars Partly as a measure of pacification, and partly to increase the value of the wet lands in the lower Yangtze basin, a large part of the population of the newly-conquered country of Yueh (Fukien and Chekiang) were transported to the lands between the Huai and the Yangtze, and settled at the government expense. In 120 B C a serious famine afflicted Shensi, the province of the capital, and the distress of the people being thus brought home to the sovereign, a vast scheme of relief was inaugurated. No less than 700,000 families were moved into the recently conquered territory of Hsin Ch'in (in the northern bend of the Yellow River, beyond the modern province of Shensi), where they were settled on the virgin land under the care of an army of government supervisors and officials. As these immigrants were mostly indigent, the state advanced money to them, but owing to the mismanagement of the officials and the peculation of those in charge of the finances, the government never recovered the loans and the loss to the state was excessive

Meanwhile the adulteration of the currency due to the still unchecked illicit minting was constantly causing the most violent fluctuations in prices, which added to the misery of the poor, embarrassed the government, and enriched a class of speculators, who were so far uncontrolled and almost untaxed by the state. The Emperor, always ready to try a new experiment, now attempted to grapple with this currency crisis, though his first efforts were far from successful. In the imperial park at Ch'ang An the Emperor had a white stag, a very rare beast, which had no fellow in the empire. On the advice of a minister, the Emperor had this animal killed, and made a kind of treasury note out of its skin, which he believed could not be copied These pieces of skin were a foot square, and were made with a fringed border and decorated with a pattern. Each piece was assigned the arbitrary value of 400,000 copper coins. The princes, when they came to pay their respects to the throne, were compelled to buy one of these pieces of skin for cash, and present their gifts to the Emperor upon it. This precaution ensured the circulation of the "White Stag Notes" The skin of the white stag was, however, a

limited quantity and the time soon came when this device ceased to supply the treasury with much needed money The Emperor had already (124 B.C.) revived and amplified the policy by which his predecessors had tried to obtain the transport of provisions to the army of the north. Merchants were now permitted to purchase titles and thus for the first time won a place in official life. Sheep were accepted instead of cash or grain, and the historian Ssŭ-ma Ch'ien (who despised all these innovations) satirically remarks· "One could obtain the rank of *lang* by giving the government sheep" The first attempt to remedy the currency crisis having produced only a limited result, the Emperor now coined new money of an alloy of silver and tin, giving his issue the arbitrary value of 3,000, 500, and 300 coppers for the three types of coin The death penalty was enacted against coiners, but failed to check the evil

The new white metal coinage was soon copied as abundantly as the old copper money, and, consequently, rapidly lost its value In 114 B.C. it had to be withdrawn in favour of a fresh issue, this time of copper coins with a red border, manufactured by a process which the historian unfortunately does not reveal However, it had no better fortune than the white metal coins, for the people soon discovered the secret, and copied it so extensively that the red border coins also lost all value. The following year, under the advice of new ministers, the Court finally settled this evil. All existing coins were declared to be without value, and minting of copper coins was centralised under the direct control of the officials of the mint at Ch'ang An. An amnesty was proclaimed for the vast multitude of coiners who had been imprisoned or sent to forced labour, and Ssŭ-ma Ch'ien alleges that a million people were set free by this act of clemency, though they had only been a fraction of the guilty. Indeed, coining would seem to have been a home industry practised throughout the country From this time, however, the currency crisis was solved by government minting of copper coins to which no arbitrary value above their intrinsic worth was attached Coining rapidly dwindled until only a few gangs of professional criminals remained It had ceased to be profitable.

The currency crisis was only one aspect of the troubles. Specu-

lation, price raising, and hoarding were more difficult to deal with. In 120 B C. the Emperor took a bold step; fiercely condemned by conservative scholars, he turned for advice and assistance to the very class which had given proof of its business knowledge and rapacity, the newly risen commercial magnates. In that year the government declared a state monopoly over the iron and salt industries, the stronghold of the new capitalism, and entrusted the organisation of this enterprise to the leading men in the industry itself Tung Kuo, a salt boiler millionaire from Shantung, and K'ung Chin, an ironmaster of Honan, were put in charge of the office, and they used the provincial salt and iron masters as their deputies. Not only the production, but also the manufacture of salt and iron were under their control. Government foundries and boiling pans replaced the private enterprises of the profiteers Even old iron was only saleable to the government officials who collected it to be melted down in the state foundries.

Another new man who rose to power in this age of innovation was Sang Hung-yang, the son of a petty shopkeeper in Lo Yang. At first made financial secretary to the new salt and iron monopoly he soon became the Emperor's chief adviser on economic questions In 119 B C the counsellor Yang K'o had suggested a new form of taxation, intended to reach those classes which had hitherto escaped. It was decreed that all merchants, shopkeepers and speculators should be obliged to declare the total of their fortune, not merely of their income, but of all that they possessed, and should then be taxed accordingly 10 per cent on every 2,000 coppers of their possessions Artisans who had to collect the raw material of their industries and store up necessary stocks were only charged on every 4,000 coppers A further tax was imposed on merchants and non-officials who used carts, and on boats more than 50 feet long. It was also decreed that those who did not declare their fortunes could be denounced by their neighbour, who would receive half the fortune, the rest being confiscated by the state, while the delinquent would be sent to forced labour on the frontier for one year Merchants, artisans and financiers were forbidden to class themselves as agriculturists and so escape the tax

This law was carried out with the greatest severity and before long produced the most unfortunate effects. The confiscations indeed filled the treasury and the pockets of the officials, but the merchants were faced with ruin. Since thrift might expose one to the dreaded denunciation and entire ruin, no one troubled to save money, and a general orgy of extravagance was the consequence. In 110 B C., the Emperor, finding that his difficulties continued, turned to Sang Hung-yang, who found a remedy for the crisis in an ingenious system of state trading intended to keep prices level. This system, called *p'ing chun*, "levelling," was operated through a government department at the capital, which regulated the tribute and commerce of the entire empire. In the provinces officers were stationed who bought up the glut of produce when prices fell, and sold the government stocks when scarcity began to raise prices. At the same time the tributes in kind which formed the bulk of the provincial taxation were regulated so that each province provided the produce which was most plentiful, and which had hitherto been the subject of speculation and hoarding by the merchants. The government maintained an extensive transport system by which the tribute of one province was transferred to another district where this product was scarce, and so prevented any sharp rise in the price. In the event of a famine in any district all the neighbouring provinces were made to send grain to the distressed area.

Although himself opposed to these policies and still more to the men of obscure origin who were responsible for them, Ssŭ-ma Ch'ien admits that the system was a success. There was no further difficulty in raising the tribute grain. The public granaries were once more filled to overflowing, the speculators found their operations impossible, and prices remained steady, even when the government required large quantities of produce for the frontier garrisons. Henceforward the treasury was well filled and it was not necessary to increase taxation when the Emperor, on a tour of inspection in the north, made heavy demands for the pay of the army and for rewards to the frontier troops. The law permitting the denunciation of private fortunes acquired by commerce, which had been so unpopular with the merchant class, was repealed, for the government no longer needed the revenue

derived from confiscating these estates, while the new system was designed to make the acquisition of large fortunes by speculation impossible.

Nevertheless, the system devised by Sang Hung-yang had its critics, who made persistent efforts to have the reforms abolished. In the reign of Chao Ti, the successor of the Emperor Wu, sixty scholars were permitted to place their views before the Emperor and ventilate the grievances of those who opposed Sang Hung-yang's administration. This famous debate on the question of the salt and iron monopoly and the *p'ing chun* system took place in 81 B C., the sixth year of Chao Ti's reign, when Ssŭ-ma Ch'ien had been dead some five years Fortunately, a record of the discussion has been preserved in the work of another scholar, Huan K'uan, who lived in the reign of Han Hsuan Ti (73-49 B.C).*

The criticism of the scholars was based on two counts Firstly, they denied the good effects of the reforms, alleging that salt had become so expensive that the people could not buy it, and that the iron implements issued by the state foundries were both more expensive and inferior in quality to those formerly made by private enterprise. Secondly, they denounced the reforms on the general ground that they were innovations which had no precedent in the golden era of the past—a characteristically Confucian argument Sang Hung-yang defended his administration on the grounds of necessity. He pointed out that the defence of the frontier was a necessity of state which could not be argued away, that revenue was essential for the pay of the troops, and that experience had proved that the old system of taxation was inadequate for the needs of the new empire. When the scholars further urged that the government monopoly of minting brought hardship to the people, the minister was on surer ground, for he had only to point out the disastrous effects which private minting in the hands of great capitalists had produced under the reigns of Hsiao Wên and Hsiao Ching (180-141 B.C.). Whether the system worked as well as he claimed, or as badly as the scholars declared,

*"The discourse on Salt and Iron," or *Yen T'ieh Lun* in the Han Wei Ts'ung Shu A translation has been made by Prof. E M. Gale. *Discourses on Salt and Iron.* Leyden. E J. Brill, Ltd. 1931.

must remain uncertain, but the pedantic arguments advanced by the critics tend to suggest that there were few real grounds for complaint, while the testimony of the hostile witness Ssŭ-ma Ch'ien proves that the reforms had been beneficial when first applied. When Sang Hung-yang asked the scholars how they proposed to defend the frontier if the monopolies which supported the army were abolished they replied:

> "Confucius observed that 'the ruler of a kingdom or the chief of a house is not concerned about his people being few, but about lack of equitable treatment, nor is he concerned about poverty, but over the presence of discontent' Thus, the Son of Heaven should not speak about 'much' and 'little,' the feudal lords should not talk about 'advantage' and 'detriment,' ministers about 'gain' and 'loss,' but they should cultivate benevolence and righteousness, to set an example to the people and extend wide their virtuous conduct to gain the people's confidence. Then will nearby folk flock lovingly to them and distant peoples submit joyfully to their authority. Therefore 'the master conqueror does not fight; the expert warrior needs no soldiers; the truly great commander requires not to set his troops in battle array.' Cultivate virtue in the temple and the hall, then you need only to show a bold front to the enemy and your troops will return home in victory. The Prince who practises benevolent administration should be matchless in the world; for him, what use is expenditure?"

The minister, who had to deal with the problems of real life rather than with the dream world of doctrinaire scholars, did not believe that 'benevolence and righteousness' would suffice to keep the nomads north of the Great Wall. He answered:

> "The Hsiung Nu, savage and wily, boldly push through the barriers and harass the Middle Kingdom, massacring the provincial population and killing the keepers of the Northern Marches. They long deserve punishment for their unruliness and lawlessness. But Your Majesty graciously took pity on the insufficiency of the multitude and did not suffer his lords and knights to be exposed in the desert plains, yet unflinchingly

You cherish the purpose of raising strong armies and driving the Hsiung Nu before You to their original haunts in the north. I again assert that the proposal to do away with the salt and iron monopoly and equable marketing would grievously diminish our frontier supplies and impair our military plans. I cannot consider favourably a proposal so heartlessly dismissing the frontier question."

To these practical arguments the scholars could only advance the well-worn Confucian dogma that the practice of virtue by the sovereign would automatically cure the ills of the state and pacify its enemies. They declared·

"Your Majesty has but to manifest Your virtue towards them and extend Your favours to cover them, and the northern barbarians will undoubtedly come of their own accord to pay you tribute at the Wall."

It is not surprising that Sang Hung-yang impatiently declared:

"Your learned men in their arguments would either try to reach high Heaven or penetrate the Abyss. Then they would attempt, and how ineffectively, to compare the conduct of the affairs of some village or hamlet with the great business of the nation. . . . They have certainly proved unfit to take part in discussions."

Huan K'uan has amplified the discussion and used it as a text to dilate upon the Confucian view of morality and state policy, but it would seem that Sang Hung-yang got the best of the argument, for the monopolies were not repealed. Indeed, the minister had proved his point, that, however well the Confucian ideal sovereign might govern, the barbarians were not to be tamed by moral precepts. Nothing better emphasises the gulf between the new men which the revolution had thrown up and the hide-bound scholars of the old tradition than the debate on salt and iron The question was one which the scholar officials did not understand in the least The economic crisis was not to be cured by quoting Confucius, but by the original and ingenious

reforms initiated by a member of the merchant class which had hitherto been debarred from holding any office.

Sang Hung-yang and his colleagues understood the essential economic unity of the new empire and the need for framing policies which took the whole state into consideration, not merely the restricted territory of the feudal fief. Industry and commerce, like administration and national defence, had to be adjusted to the wider horizons of the centralised empire, the feudal economic system, like the feudal political system, no longer sufficed.

Chapter VIII

HAN IMPERIALISM AND THE DISCOVERY OF THE WEST

UP to the end of the feudal period the Chinese confederacy had dwelt in isolation unbroken by any direct contact with another civilised people. Hemmed in on the north by the untamed nomads of the Mongolian steppe, and cut off from India by the wild forest clad mountains and malarial valleys of the Burmese borderlands, the civilisation of the Middle Kingdom had progressed along its own lines, developing those peculiar and imperishable characteristics which have remained the distinctive mark of the Chinese culture.

The great revolution which destroyed the social and political structure of ancient China, prepared the way for a new era of conquest, discovery and expansion, the age of Han imperialism, when China emerged as a world power dominating the eastern half of Asia The foreign policy of the emperors now embraced a wider scene than the oft disputed territories of the Yellow River plain. The unified Chinese Empire was soon engaged in a desperate and prolonged struggle with the barbarians of the north The details of these wars, one acute phase of the secular struggle between the desert and the sown, are not important, but one consequence of the long struggle, the Chinese discovery of the West, was of the first importance in the cultural history of eastern Asia.

It was during the reign of the Emperor Wu (141-87 B.C.) that the war with the Hsiung Nu nomads developed into a desperate contest engaging the full strength of the Chinese Empire. The Hsiung Nu, a Turki people, as some traces of their language preserved in Chinese transliterations suggest, have been identified as the same people as the Huns who invaded Europe in the 4th century A.D In the middle of the 3rd century B.C this people had achieved a measure of unity and organisation which rendered it formidable to the Chinese kingdoms north of the Yellow River. The nomads differed from the Chinese in customs, religion, diet—indeed, in almost every respect Consequently the Chinese regarded them as scarcely human, creatures who had the "hearts of beasts"

Nevertheless, the Hsiung Nu were by no means so primitive a people as the forcible expressions used by Chinese historians tend to suggest. They obeyed a single chief, the Shên Yu, a title which the Chinese regarded as equivalent to Emperor. Under the Shên Yu were two kings, of the Right and Left—the west and east respectively—and this identification of right and left with west and east is still a Turkish usage. The Kings of the Right and Left had subordinate officials organised into like categories, and, lastly commanders of one thousand, of one hundred, and of ten men. Their social customs, which the Chinese regarded with horror, included the practice by which a son took into his harem all the wives of his dead father, except his own mother, and also married all the wives of his deceased brothers. Being nomads, the Hsiung Nu did not cultivate the soil, nor form fixed encampments. Their diet was mainly meat and milk, a fact which the semi-vegetarian Chinese found repulsive.*

During the early years of the Han dynasty, the emperors, inheriting an empire worn out by incessant wars and the turmoil of the revolutionary period, were content to pursue a passive policy of defence against the Hsiung Nu raids, endeavouring to secure the frontier by defending the Great Wall, and obtain peace by making the Shên Yu presents of silk and other luxuries unobtainable in the steppes With the accession of the energetic and forceful Emperor Wu there was a change of policy. The new sovereign found the empire fully recovered, prosperous and populous. The cessation of internal wars, the diminished power of the feudal princes of the imperial family, and the increased prestige of the throne, gave opportunity for a policy of expansion and conquest which earned this Emperor his posthumous title of *Wu*, i.e. "the Warlike"

At his accession (141 B C.) the Han Empire covered the whole of what is now North China up to the Great Wall, except the remoter western districts of Kansu province (Map 4) South of the Yangtze

*The Chinese have never employed cow's milk as an article of food, and to the present day regard European dairy products with aversion. In Chinese the only word for milk means mother's milk. Cow's milk has to be described as such in Chinese at the risk of causing embarrassment Similarly, butter is known as "cow's milk oil," or simply as "yellow oil."

MAP 4. *The Ch'in and Han Empires.*

it only included the modern provinces of Szechuan, Hunan and Kiangsi, with the small parts of Anhui and Kiangsu which lie south of the river. To the west the mountain lands and plateaux of the south-western provinces were occupied by aboriginal tribes, few of whom had attained any measure of civilisation. An exception was the kingdom of Tien, which was situated on the shores of the Kun Yang lake with its capital near the site of modern Yunnanfu Tien had been conquered by Wei, the King of Ch'u (339-329 B.C.), who had despatched a general to reduce the mountain lands to obedience. When the advance of Ch'in deprived the kingdom of Ch'u of its western provinces, the general, finding his communications cut, established himself in the fertile well-protected plateau of Yunnanfu and reigned as an independent King. His descendants, supported by the posterity of the Chinese who had composed the original army, were still in possession of this isolated region

The south-east coast, from the neighbourhood of modern Hang Chou down to Tongking, was divided in the reign of the Emperor Wu between three kingdoms, Yueh Tung Hai (Chekiang), Min Yueh (Fukien), and the great kingdom of Nan Yüeh, which comprised both the modern provinces of Kuangtung and Kuangsi and also Tongking and northern Annam. Nan Yueh had been conquered by Ch'in Shih Huang Ti, but upon the fall of the Ch'in Empire, the Chinese general in command made himself King of Nan Yueh, and ceased to pay allegiance to the Chinese Emperors.

The Emperor Wu did not at first pay attention to these southern kingdoms, for in 135 B C, acting on the advice of one of his generals, the Emperor attempted to entrap the Shên Yu and his army in an ambuscade at Ma I, "Horse Town," a frontier post on the Wall in north Shansi. The Shên Yu, by an accident fortunate for him, learned of his peril at the last moment, and escaped with his horde. This affair led to a renewal of hostilities which lasted without intermission throughout the reign of Wu and his immediate successors. The varying fortunes of the long struggle need not concern us The Chinese, developing a new technique of warfare in which cavalry played the greatest rôle, were on the whole successful, though their victories were checkered

by disasters when whole armies, surrounded by the mobile desert horsemen, were compelled to surrender The importance of the Hsiung Nu war is that it led directly to the Chinese discovery of the West, and, indirectly, to the conquest and permanent incorporation of the southern kingdoms.

On one of these campaigns the Chinese learned from Hsiung Nu prisoners of the existence in the west of the nation called the Ta Yüeh Chi, who had been completely defeated by the Hsiung Nu in 165 B.C , and had fled westward In 138 B C the Emperor decided to attempt to find the Ta Yueh Chi and induce them to renew the war against the Hsiung Nu with Han support For this embassy into unknown lands he chose one Chang Ch'ien, and with his usual skill in picking his officers, he selected a man eminently fitted for the hazardous task. In 138 B C Chang Ch'ien started from the western border of Kansu with 100 Chinese followers Almost immediately he was captured by a roving band of Hsiung Nu, and kept prisoner for ten years. During this long captivity the envoy never forgot his trust and watched for his opportunity At last, when the Hsiung Nu, believing him to be forgotten by his sovereign and content to pass his life as a nomad, had ceased to guard him closely, the intrepid Chinese escaped with some of his suite and his Hsiung Nu wife, whom he had married in his captivity

Chang Ch'ien fled westward, towards the Ta Yueh Chi, not eastward to China. He reached the Ili Valley, only to find that the Ta Yueh Chi had been driven from that country by the Wu Sun, a nomad people believed to have been of Khirgiz stock Chang Ch'ien, undeterred, passed on into the kingdom which the Chinese henceforth called Ta Yüan, which was situated in Ferganah near the site of Kokand, in what is now Russian Central Asia. There he learned that the Ta Yueh Chi were still further south and west in the land between the Oxus and the Jaxartes or Syr Daria. After reaching the Ta Yueh Chi across such vast distances and in face of so many perils, the ambassador found them entirely unwilling to return to the east The Ta Yueh Chi had recently invaded and partially occupied the land of Ta Hsia, driving the inhabitants south of the Oxus Chang Ch'ien stayed among them for a year, but finding that he could never persuade them to

return, he started back to China, being recaptured by the Hsiung Nu before he reached the frontier. This second captivity lasted a year, after which Chang Ch'ien, profiting by a revolution among his captors, escaped once more, and in 126 B C, after twelve years' absence, reached Ch'ang An with his Hsiung Nu wife and one single survivor of the hundred Chinese who had started with him.

The importance of this voyage is apparent when the lands visited by Chang Ch'ien are identified by their Greek classical names.* Ta Yuan is the modern Ferghana, the Sogdiana of the Greeks, and Ta Hsia is Bactria. These countries, which had been conquered by Alexander, had later become an independent kingdom under dynasties founded by Greek adventurers. Shortly before Chang Ch'ien's journey the Euthydemid dynasty of Bactria, which had also conquered a large part of India, was itself overthrown in Bactria by Eucratides, a Greek general. In 145 B C his son, Heliocles, in turn invaded India which was still ruled by scions of the displaced Euthydemid dynasty Four years later, in 141 B C, the Parthians invaded Bactria, and at a date unknown, following upon this blow, the Bactrian Greek kingdom of Heliocles was overwhelmed by an invasion of nomads

These nomads are called Asii or Asiani by Greek writers and have been identified as the Ta Yueh Chi whom Chang Ch'ien found in 128 B C. as the masters of Bactria. Their conquest of the Greek kingdom therefore took place at some date between 141 and 128 B C The Yueh Chi were a people who had been settled on the western borders of China, and had fled westward after being defeated by the Hsiung Nu They are also called Tochari by the Greeks, and Tukhara by the Indians. Later in India they were known as Kushans. It is probable that they were a mixed horde of which the Asii were the dominant element and the Tochari subordinate. There is some evidence that the latter were a people who had originally migrated eastward from the borders of Europe, and spoke a language with Italo-Celtic affinities.

When Chang Ch'ien reached Bactria the nomad conquest was

*For these identifications and the history of the Greek kingdoms in Central Asia and India see *The Greeks in India and Bactria* W W Tarn. Cambridge University Press, 1936.

MAP 5 *The World as Known to the Han Dynasty.*

still recent, and it is probable that the inhabitants of the towns which he describes were a mixed people certainly including many Greeks, although as he communicated through the Yueh Chi he does not seem to have realised that the Greeks were a distinct people among the inhabitants of Ta Hsia Nevertheless he had in fact reached the fringes of the Hellenistic world, and it is extremely interesting to learn what impression was made upon a Chinese Ambassador by these last outposts of Greek civilisation His report has been preserved, apparently in his own words, in the Chinese annals

> "Ta Yüan [Kokand, Sogdiana], the people are sedentary [not nomads] and cultivate the soil. They have many superb horses, which sweat blood when they perspire. There are cities, houses and mansions as in China. To the north-east is the country of the Wu Sun [the Ili Valley], to the east is Yü T'ien [Kashgaria] West of Yü T'ien the rivers flow westward into the Western Sea [The Caspian and Aral, Chang Ch'ien did not distinguish between the two]. From Yu T'ien eastward the rivers flow to the east into the salt swamps [the Tarim river system] From these swamps the waters flow underground until they reappear as the source of the Yellow River. From the salt swamp to Ch'ang An, the distance is 5,000 Li * The Right horde of Hsiung Nu live between the salt swamps and the Great Wall of Lung Hsi [Kansu] The Wu Sun [Khirgiz], K'ang Chu, and Yen Ts'ai, who are north-west of the K'ang Chu, and Ta Yueh Chi, are nomads with customs similar to the Hsiung Nu.† Ta Hsia [Bactria] is south-west of Ta Yüan and has similar customs When your servant was in Ta Hsia he saw large bamboos and cloth of Shu [Szechuan]. When he asked the people of Ta Hsia how they obtained these things they told him that their merchants bought them in Shên Tu [Sind, India] which is a country several hundred li south-east of Ta Hsia, and is a sedentary nation, like Ta Hsia Both Ta

*The Chinese Li is equivalent to one-third of a mile Chang Ch'ien's belief that the Yellow River was really a reappearance of the Tarim is not correct

†The K'ang Chu and Yen Ts'ai lived north of the Jaxartes or Syr Daria in the country now called the Khirgiz Steppe.

Hsia and Ta Yüan are tributary to An Hsi [Parthia*]. So far as your servant could judge Ta Hsia is 12,000 li [4,000 miles] from China. As it is north-east of Shên Tu, this kingdom cannot be so far from China."

Chang Ch'ien, who had experienced to the full the dangers of the northern route to the Greco-Bactrian kingdoms, urged his sovereign to attempt communication by means of India, arguing that as the people of Bactria used the bamboos and cloth of Szechuan there must be some route by which they obtained these goods The Emperor followed up this suggestion and sent envoys through Yunnan to find the road to India The country between Burma and Yunnan is in reality one of the most inaccessible regions in the world, traversed by deep malarial valleys and steep forest-clad ranges. This region, the modern prefectures of Ta Li and Têng Yueh, was then inhabited by savages who killed or arrested all the Han envoys, so that not one ever got through to India. The manner in which the Bactrian Greeks obtained the products of Szechuan thus remains a mystery Perhaps the tribes of the borderlands themselves traded these goods to their neighbours in Burma, or again Chang Ch'ien may have been mistaken, and the big bamboos and Szechuan cloth which he saw in Bactria may have been similar products coming from some part of India.

For some years after Chang Ch'ien's adventurous journey, the Chinese Court, pursuing the will-o'-the-wisp of an Indian trade route, did not profit by the discovery of the road to the Ili Valley, which moreover was in the hands of their enemies. Nevertheless, the idea of finding a way through Yunnan to the new world of Chang Ch'ien's discovery led indirectly to important results, partly through the intelligent observations of another Chinese

*The Chinese name for Parthia, An Hsi, has been thought to be derived from the dynasty of Arsaces but an alternative view put forward by W W Tarn, *op cit.*, seems more probable and satisfactory The Chinese like other ancient travellers frequently confused the names of cities and countries, Merv was officially one of the many Antiochs under the Seleucid empire and the Chinese took this name—Antioch—rendered it An Hsi and used it for the whole Parthian kingdom. A close analogy to this mistake is the early European voyagers' corruption of the name of the province of Kuangtung, which they rendered Canton and applied to the city of Kuangchou.

envoy In 135 B.C. a war broke out between the Kings of Nan Yüeh whose capital was Canton, and Min Yueh, a kingdom occupying the modern province of Fukien The King of Nan Yüeh appealed to China for help, and a Han general, who had recently subdued Tung Yueh (Chekiang), despatched one of his officers, T'ang Mêng, to Canton as an envoy.

At Canton the Chinese ambassador was given a delicacy made from the fruit of a kind of mulberry which T'ang Mêng had reason to believe grew only in Szechuan, the land of fruits and flowers Like Chang Ch'ien a few years later, T'ang Mêng promptly enquired how the Cantonese obtained this fruit, and was told that it came down the river system of the West River (which reaches the sea at Canton) being traded from the country called Yeh Lang Yeh Lang was an independent state occupying the northern part of modern Kueichou, around the city of Tsun I. On his return to China T'ang Mêng enquired of the Szechuan merchants, and learned, as he suspected, that this fruit was exported by them to Yeh Lang, whence it was carried across the Kueichou mountains to some point on the Pan Chiang river, which is in fact one of the headwaters of the West River.* T'ang Mêng thus discovered the river system of the West River and the overland route from Szechuan to Canton This route had hitherto been unknown to the northern Chinese, a fact easily explained by the extreme ruggedness of the country, which to-day is still only traversed by small paths unsuitable for wheeled traffic.

Several years passed before T'ang Mêng's discovery was used by the Chinese Court In 111 B C the troubles of Nan Yüeh gave the Emperor an opportunity to intervene in the south, which he was the more anxious to do as he thereby hoped to open the long discussed trade route to India and Bactria. In that year the Queen of Nan Yueh, herself a Chinese by birth, was regent for her son, the infant King, who had recently succeeded his father. The Queen, perhaps fearing that powerful China would soon pick a quarrel with Nan Yueh and conquer the kingdom, decided to avert the danger by offering a voluntary submission. When the

*It would be interesting to know exactly where the Pan Chiang was navigable at this period, for at the present time it is not navigated in Kueichou, where it flows in a deep, rock-encumbered gorge

Emperor Wu heard of her intention he sent as his ambassador a Chinese officer who had formerly been the lover of the Queen of Nan Yüeh before she had left China On his arrival the ambassador and the Queen renewed their intimacy and together planned the submission of Nan Yueh.

Unfortunately for them their plans became known to the chief minister, Lu Chia, who opposed them vigorously. The Queen attempted to have him assassinated, but, failing in the attempt, was herself put to death together with the King and the Chinese ambassador Lu Chia then put another infant prince, son of a concubine of the late King, on the throne, and published a manifesto declaring that the Queen and her foreign lover were about to betray the state to the Chinese On hearing this news the Emperor Wu, ill-disposed to tolerate the murder of his ambassador, declared war.

The campaign was swift and successful Six Chinese armies, some of which went by sea, and one of which followed the new road revealed by T'ang Mêng's intelligent enquiries, invaded Nan Yueh, and, after some easy conquests, took Canton. Lu Chia and the young King attempted to escape by sea, but were made prisoners, and the whole kingdom of Nan Yueh reduced to the status of Chinese provinces. This campaign, which cost so little effort, was none the less one of the most important advances made by the Chinese in the Han period. The two provinces of Kuangtung and Kuangsi, and also Tongking, were incorporated in the empire, where, with the exception of the latter, they have ever since remained The destruction of Nan Yueh was followed by that of all the petty states of the south, Min Yueh, and even Tien or Yunnanfu, which was reduced to the status of a tributary. Had Nan Yueh remained independent it is very possible that a separate culture would have arisen in the south, and the Chinese might never have established their influence in the valley of the West River Although the Han conquest of Yunnan and Kueichou proved imperfect and transitory, the southern coast and the rich valley of the West River was for ever made an integral part of the Chinese land.

Recently there have been discovered near Hong Kong, in territory which formed part of this kingdom, a series of finds in

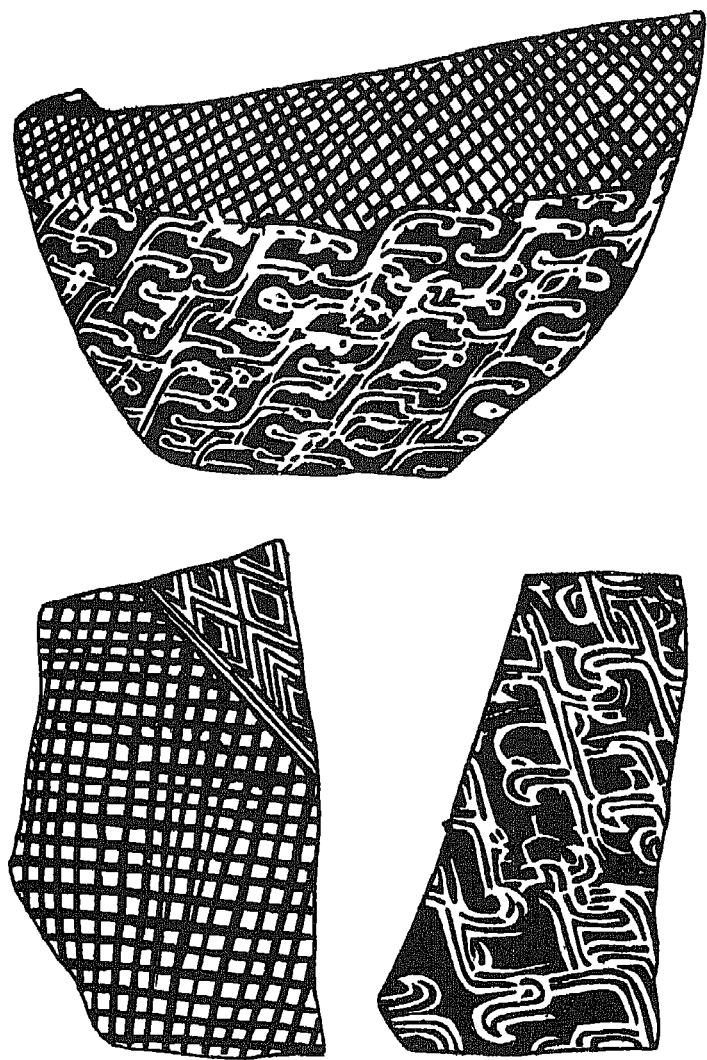



FIG. 34 *Pottery found at Lamma Island, near Hong Kong.*

pottery and bronze which may well date from the time of the conquest of Nan Yüeh, or perhaps somewhat later. The specimens, such as those illustrated in Fig. 34, consist of potsherds with designs upon them clearly derived from northern bronze motifs. With these there occur bronze weapons (Fig. 35) and implements, including halberds of Han type, the whole associated with quartz discs, rarely stone beads, ground stone knives, and perhaps ground stone axes, though on the relationship of these last to the pottery and other objects it is probably wise to suspend judgment * The decoration on the bronze dagger (Fig 35) is also strongly reminiscent of the decoration on numerous bronze daggers of the same type found at An Yang, and therefore Shang The date of the finds on Lamma has not been determined, and this resemblance may be due to the survival of an old style in a remote district

The Emperor's purpose in subduing these countries, as is expressly stated by the historian of the Early Han dynasty, was to make a chain of provinces stretching to India and Ta Hsia, or Bactria, and this fact strikingly illustrates the impression which Chang Ch'ien's discoveries had made on the Chinese Court.

As has been pointed out, the geographical obstacles to the realisation of this project were immense, indeed before long the Emperor realised that the southern route to Bactria was impassable. His interest in the remote west did not decrease on that account Events in the north had now made the road across Chinese Turkestan more accessible, and the Emperor, still seeking an ally in the west to turn the flank of the Hsiung Nu, sent Chang Ch'ien on a second embassy, this time to the Wu Sun in the Ili Valley. Chang Ch'ien actually set out in 115 B.C., before the conquest of Nan Yueh, and his journey was facilitated by the fact that the Chinese had just conquered the two districts of Su Chou and Liang Chou, which form the long "arm" of the province of Kansu, stretching out along the road to Turkestan.

Chang Ch'ien, though welcomed by the King of the Wu Sun,

*Investigation in this area is in active progress For past discoveries see papers by Professor J L Shellshear, "Pottery Associated with Bronze Implements from Hong Kong" (*Proceedings of the First International Congress of Prehistoric and Protohistoric Sciences, London*, 1932); and D J Finn, S J., "Archæological Finds on Lamma Island near Hong Kong" (*Hong Kong Naturalist*, Vols III, IV and V, 1932-34).

hereditary enemies of the Hsiung Nu, found the tribe unwilling to enter into hostilities with their powerful foes. He did not persuade the Wu Sun to ally themselves with the Chinese, but he

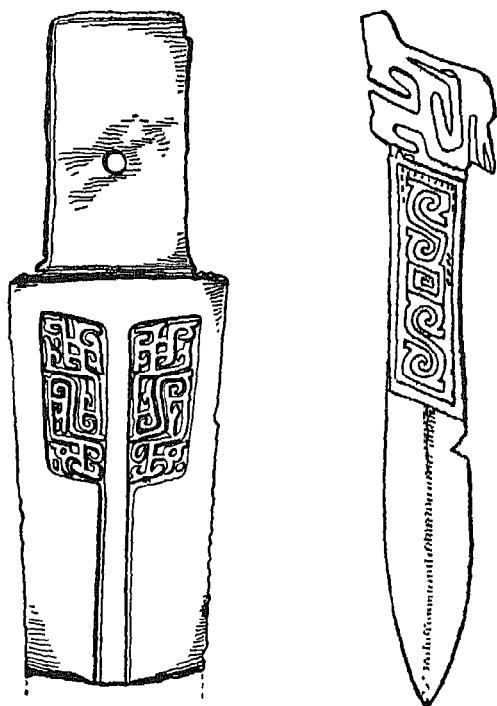



FIG. 35. *Bronze Dagger and upper part of Bronze Sword, from Hong Kong.*

did secure their goodwill and open a road through their country by which other Chinese embassies passed frequently to Ta Yüan and Ta Hsia (Bactria). The first of these new contacts were made by officers of his suite whom he despatched to An Hsi (Parthia), Shên Tu (India) and Ta Hsia (Bactria). Unfortunately no record of their travels or their success or failure has survived. However, several embassies reached Ta Yüan (Kokand) during the next few years, charged with the duty of obtaining some of the famous horses which had so much impressed Chang Ch'ien on his first voyage.

The King of Ta Yuan, however, absolutely refused to sell any

of these horses to the Chinese. At last one Chinese envoy, employing in these distant countries the high-handed manners which Han prestige made possible in lands nearer home, carried off several of the best horses by force, and set out for China with his booty. The authorities of Ta Yüan sent soldiers in pursuit, who, having waylaid the Chinese envoy in a pass, slew him and his suite and recovered the stolen horses. Probably the King of Ta Yüan imagined that these positive measures would rid him of the nuisance of Chinese importunities. He doubtless considered the Chinese a distant people incapable of taking vengeance, and probably far less powerful than their ambassadors were wont to claim.

The Emperor Wu, for his part, was no more disposed to tolerate the assassination of his envoys in Central Asia than he had been in Canton. In 104 B C the general Li Kuang-li, brother of one of the imperial concubines, was despatched with an army to reduce Ta Yüan to obedience The magnificent disregard of geographical obstacles and distances displayed by such an expedition, which had to cover more than 2,000 miles, largely across deserts, is a striking proof of the atmosphere of confident imperialism which prevailed at the Court of China, and also of the general ignorance of geography.

Li Kuang-li soon discovered these difficulties for himself. The Tarim basin, the vast country now called Chinese Turkestan, was then divided between thirty-six small kingdoms, each of which occupied one of the separate oases into which the cultivatable area of Chinese Turkestan is divided As the food supply of these oases is barely sufficient for the inhabitants themselves, and the year 104 B.C. had not been a good one, the cities were quite unable to feed the large Chinese army without incurring the risk of famine. Consequently, Li Kuang-li was obliged to capture every city he came to before obtaining provisions. Worn out by famine, desert marches, and constant fighting, the Chinese army was finally completely defeated outside the city of Yu Ch'êng, a town in the kingdom of Ta Yüan, near which the Chinese envoy who had carried off the horses had been slain. Li Kuang-li then carried out a retreat to China, arriving at the frontier with hardly a tenth of his army

Far from considering this retreat something of a feat in itself,

the Emperor was so enraged that Li Kuang-li and his ragged survivors were forbidden to cross the frontier into China on pain of death They remained encamped just outside Tun Huang, the last city of China, in the far west of Kansu province It is indeed very likely that only Li Kuang-li's powerful influence in the Inner Palace—his sister was one of the imperial favourites—saved the general from decapitation, the usual fate of defeated Han commanders. However, the Emperor had not renounced the plan of conquering Ta Yuan, believing that if he let the murder of ambassadors go unpunished, it would be impossible in future to maintain contact with the western world In 102 B.C he sent Li Kuang-li a reinforcement of 60,000 men and ordered him to renew the attack. This time the general, who had no doubt learned from his previous experience, was more successful. After great suffering and the loss of half his army through the hardship and perils of the long march, Li Kuang-li with 30,000 Chinese arrived before the city of Er Shih, capital of Ta Yuan, and seat of the King,* whom the Chinese call Mu Kua.

Mu Kua has been identified as the name Maukes or Maues, the Greek version of a Saca name which occurs more than once in the Greek records of the Saca in India. The kingdom of Ta Yüan, which had been known to the Greeks as Sogdiana, and had been a province of the Greek kingdom of Bactria, was conquered by the Saca nomads about 159 B.C It was this Saca Kingdom of Ta Yüan that Li Kuang-li invaded. After defeating the Ta Yüan army outside the walls of Er Shih, the capital, the Chinese laid siege to the city, and carried the outer town by storm. The citadel held out, although the Chinese had cut the water supply, because the Saca had obtained the services of "a man of Han," that is a Chinese, who knew how to dig wells. This Chinese was presumably either a prisoner or a deserter Nevertheless after forty days of siege the nobles murdered their king, who had refused to negotiate, and opened peace parleys with Li Kuang-li The Chinese general knew that the citadel had now got water

*Er Shih is, of course, the Chinese name of this city. The Greek name has not been identified, but the site is believed to correspond to Oura Tepe on the road between Khojent and Tashkent in the upper valley of the Syr Daria (*Memoires Historiques de Se-Ma Ts'ien*. Chavannes.)

and a large stock of provisions; his own forces were short of supplies and in danger of being attacked in the rear by the K'ang Chu nomads whom Mu Kua (Maukes) had called to his aid. It is possible that the arrival of these nomads would have been no more welcome to the Saca nobles than to the Chinese, and the policy of inviting them into Ta Yuan may have been one cause of the murder of king Mu Kua.*

The Chinese general therefore wisely agreed to peace. In return for several of the best horses and 3,000 of inferior quality, together with provisions for his army, Li Kuang-li agreed not to enter the city and to withdraw to China After his departure another revolution occurred in Ta Yuan. The usurper was killed and a relative of the late King restored to the throne. However, the new King was quite willing to maintain friendly relations with China. His son was sent to the Han Court, the Chinese regarding him as a hostage, and frequent embassies passed between China and Ta Yüan.

Half a century after Li Kuang-li's expedition to Ta Yuan the Chinese came into direct contact with the last surviving Greek Kingdom in north-west India According to the history of the Early Han Dynasty,† in the reign of Han Yuan Ti (48-33 B C), who was the third successor to the Emperor Wu, Wu T'ou Lao, King of Chi Pin, killed the envoys whom Wen Chung, the Chinese commander on the Central Asian frontier, had sent to his court. When the Chinese protested, Wu T'ou Lao sent an ambassador to tender apologies Wen Chung decided to accompany this envoy on his return to Chi Pin, perhaps because he wished to investigate the situation for himself. His suspicions were justified, for the prince of Chi Pin, Wu T'ou Lao's son, plotted to assassinate Wen Chung. The Chinese commander forestalled him, and allying himself with Yin Mo Fu, son of the King of Yung Ch'u, attacked Chi Pin, killed Wu T'ou Lao's son and installed Yin Mo Fu as king of Chi Pin under Chinese suzerainty.

This obscure frontier episode would be of little interest were it not that Professor W. W Tarn‡ has shown that Yin Mo Fu, the

*Ch'ien Han Shu Chap. 61.

†Ch'ien Han Shu Chap. 96

‡*Op. cit.*

son of the king of Yung Ch'u, whom Wen Chung installed as a Chinese vassal king of Chi Pin, is none other than Hermaeus, the last Greek king to rule in north-west India Hermaeus, who reigned, as his coinage shows, between 48 and 32 B C., was the son of Amyntas, King of Alexandria in Parapamisadae, and was probably a descendant of Eucratides, founder of the second dynasty of Greek kings in Bactria. The region which the Greeks called the Parapamisadae lay east of the Hindu Kush in what is now eastern Afghanistan and the North West Frontier province of Pakistan Amyntas did not rule all of this region, for the district which the Greeks called Kophen, the Kabul valley, had fallen into the hands of the Saca invaders, and was ruled by a certain King Spalyris Like other barbarian kings who had seized part of the old Greek kingdoms in India, Spalyris used Greek inscriptions on his coins (which were probably struck by Greek workmen) and it is the Greek word "Adelphou" on the coins of Spalyris that the Chinese rendered as "Wu T'ou Lao." Wu T'ou Lao is in fact Spalyris, Saca King of the Kabul valley, which is the Chinese Chi Pin, a name taken from the Greek Kophen

The identification of Hermaeus and Yin Mo Fu is not so strange when the old pronunciation of Chinese is taken into account, for then the first syllable probably ended in "M" rather than "N." Moreover, Wen Chung and his suite certainly did not use Greek when communicating with Hermaeus Yung Ch'u, the Chinese name for Alexandria in Parapamisadae, which was Hermaeus' hereditary kingdom, comes from "Yonaki," the Indian word for a Greek city, in turn derived from the Indian rendering of "Ionian."

The position of Hermaeus after this alliance with China had restored Greek rule in the Kabul valley, was still far from secure For years the Greeks had been losing ground in all parts of their once extensive Indian empire, and before many years had passed Hermaeus found himself threatened by a new race of nomad invaders, the Kushans, who were the same people as the Yueh Chi who had conquered Bactria. One horde of Yueh Chi had occupied the country now called Sind, a former Greek province, and they now began to press north into the Panjab. Under this danger Hermaeus appealed to China in 30 B C , and sent envoys to the

Han court. The reigning Han emperor was Han Ch'eng Ti (32-7 B C.), almost the last of the line of Early Han, and the last to reign as an adult. The court was already preoccupied with internal troubles, and the pretensions of the Wang family, who were soon to usurp the throne, dominated the political scene Han Ch'eng Ti turned down the appeal of Hermaeus, and refused to intervene in such distant lands. The Greek envoys returned empty handed, and a few years later the Kushans overwhelmed the last Greek kingdom Thus a contact which, had it been made a century earlier when the Greek empire in India was strong, might have proved most fruitful and left invaluable records in both civilisations, came too late to have any deep influence.

There remains one other very important advance made by the Chinese in the reign of the Emperor Wu, a period which saw a sudden expansion of the Chinese world greater than all the slow progress of many centuries. In 108 B.C the Emperor, attempting to apply his outflanking strategy against the Hsiung Nu to the east, sent an expedition, which, after some fighting and much intrigue, conquered the kingdom of Chao Hsien, northern Korea, which like Nan Yueh and Tien had been founded by a Chinese adventurer The importance of this conquest was great The Chinese province of Lak Lang, founded in place of the destroyed kingdom, became rich and prosperous, diffusing the culture of the Han Empire throughout the peninsula, whence it passed over the sea to Japan The wealth and high standard of art and luxury prevailing in Lak Lang has been revealed by archæological finds.*

After the death of the Emperor Wu (87 B C.) his successors maintained some contact with the western world, but did not extend the area of new geographical discovery The long war with the Hsiung Nu came to an end, if only for a time, in 51 B C. when the nomad nation, having split into two warring sections, the northern and southern hordes, the Shên Yu of the south paid homage at Ch'ang An. The spur of nomad menace was now removed. As has been mentioned, the Emperor Wu's embassies had been despatched, not primarily with the intention of dis-

*For the influence of Lak Lang on Japan see G B Sansom, *Japan*, 1932. Chap I p 13 *seq*

covering new lands, but to contract alliances with nations who could attack the Hsiung Nu on their exposed western flank The Han Court, no longer having the Hsiung Nu war on its hands, relaxed its interest in the western lands.

Moreover, the Han Empire was soon to be shaken by an internal crisis which prevented any attention being paid to foreign affairs. The recurrent troubles at the Han Court caused by the ambitions of the consort families, the relatives of the Empress, have been referred to in the last chapter. Only the Emperor Wu devised a method, brutal and ruthless as it was, of overcoming this danger. When he finally made choice of his heir, he had the young prince's mother put to death By this savage precaution he effectually prevented the rise to overweening power of the family of the Empress mother. His successors, more humane or less far sighted, did not perpetuate this cruel custom. The consort families rose once more to high positions, until at last the family of Wang, which had already dominated the Court for some thirty years, achieved the height of ambition and, in the person of Wang Mang, usurped the throne itself (A D 9) The usurper soon found that the authority which his family had acquired at the capital did not extend to the provinces, where the collateral branches of the Han house were still numerous and popular. Claimants arose who gained a large following, and a devastating civil war broke out. This long destructive war ended in A D. 25, with the accession of the Emperor Kuang Wu Ti, founder of the later Han dynasty, who removed the capital to Lo Yang in Honan, Ch'ang An having been ruined in the turmoil The new Emperor had several minor revolts to suppress even after this event, not the least of which was the rebellion of the Red Eyebrows, the first of those recurrent half-mystical, half-bandit secret societies which have often gained very wide popular support in times of distress.* When Kuang Wu Ti had at last restored peace, the empire was so

*Since Han times these societies have frequently reappeared, and usually with a very similar ritual and belief In modern times the "Boxers" (whose real title was the "Society of the Harmonious Fist") were the most famous, but since then there have been the Red Spears, the Heavenly Gates and the Big Swords, all flourishing in north China, the land of the original Red Eyebrows, and their more famous imitators the Yellow Turbans at the end of the Han dynasty (see Chapter XI).

exhausted that the Emperor forbade the word "war" to be spoken in his hearing.

It was not until his son and successor, Han Ming Ti (A.D 58-77), had been some years on the throne that the Chinese Court once more turned its attention to the affairs of Turkestan and the western world As before, it was an outbreak of war with the Hsiung Nu which led to fresh contacts with these countries. Although the two hordes still remained hostile and divided, the confusion in China after Wang Mang's usurpation had left the border exposed to raids and forays in which the nomads delighted. In A.D. 73 the Emperor Ming Ti despatched armies into the nomad country, and, as before, the Chinese strategy was directed against the western flank of the Hsiung Nu It was regarded as essential that the kingdoms of Turkestan be once more brought under Chinese suzerainty

It was now more than sixty-five years since the Chinese had held any communication with the west The generals in charge of the expedition against the Hsiung Nu were thus ill-informed as to the situation in the Tarim Valley In A D 73 the commander-in-chief despatched one of his officers on an embassy to these kingdoms to contract alliances, and if possible obtain recognition of Han suzerainty This officer was Pan Chao, the most famous Chinese administrator ever sent to Turkestan, the man who took up the task begun by Chang Ch'ien 211 years before, and this time brought it to a successful conclusion. The full story of Pan Chao's career of thirty years in the west cannot be told here, but an example of his methods and his character is afforded by the events of the first mission

Pan Chao, accompanied by a civil colleague and only thirty-six followers, went first to Shên Shên (or Lou Lan) in the Lop Nor district. At first the Chinese were well received, but after a few days the attitude of the King of Shên Shên changed. The subordinate members of the embassy attributed this coolness to the fickle nature of the Central Asiatic peoples, but Pan Chao, who knew that during the long withdrawal of Chinese influence the Hsiung Nu had gained the ascendancy in these kingdoms, suspected that the King's changed attitude was due to the presence of an envoy of the Shên Yü. Pan Chao at once sought out the

officer appointed to care for the Chinese embassy, and, assuming a menacing tone, as of one who already knew the truth, he demanded the whereabouts of the Hsiung Nu envoy. The Shên Shên official, impressed by this bluff, admitted that the Shên Yu had in fact sent an envoy, who had arrived three days before, and was now residing at a place ten miles outside the city.

Pan Chao decided to impress these petty kings once and for all by a resolute action. He imprisoned the Shên Shên official in the Chinese camp, and, taking his thirty-six followers, but not mentioning his plan to his civilian colleague, he set out after dusk to the residence of the Hsiung Nu envoy After posting ten drummers around the house, Pan Chao set fire to the wooden buildings, while the drummers beat the attack with all their power The Hsiung Nu, believing that they were attacked by a large force, and unable to see the number of their opponents for the darkness and smoke, rushed half-clad out of their burning house, and were promptly despatched by Pan Chao and his handful of Chinese The Hsiung Nu envoy himself and thirty of his followers were killed The rest, thinking escape impossible, fled back into the burning house, where most of them perished Pan Chao, without losing a single man, returned safely to his quarters.

On hearing the news of this high-handed action his civil colleague was much annoyed, since he feared that Pan Chao would claim all the credit for himself Pan Chao had kept his plans secret because he realised that in affairs of this sort the hesitations and caution natural to a man of letters would ruin his plan. Now he reassured his colleague, saying: "I am not the man to claim all the glory for myself, you shall be associated in our success when we report to the throne." His colleague being thus won over, Pan Chao sought an audience with the King of Shên Shên, and showed him the head of the Hsiung Nu envoy. The King, astounded at the hardihood of the Chinese, promptly concluded the alliance Pan Chao offered, and sent his son as a hostage to Lo Yang

Following up this success Pan Chao presented himself at other Courts as far west as Kashgar (Yu T'ien) and everywhere gained his ends by his firmness and strength of character However, these adventures were not pleasing to all the ministers of the Han Court.

A party existed who deprecated any advance into the west as useless and expensive In A.D 76 Pan Chao was recalled on their advice, and his first mission left no permanent result. On his departure the people of Turkestan, who had come to respect and admire the justice of the Chinese envoy, and appreciated the peace and order which Han suzerainty had introduced into the country, were filled with despair, and implored him to remain. Pan Chao, however, returned obediently to Lo Yang where a new Emperor, Han Chang Ti, was now reigning

Four years later Pan Chao managed to reverse the policy of the Court, by proposing to the Emperor a policy by which he said it would be possible to reduce the whole of the west to the Han obedience without employing either Chinese armies or provisions drawn at great cost from China He declared that he would be able to use the troops of the submitted states themselves against those who remained recalcitrant, and that with a few hundreds of experienced Chinese soldiers and officers, he could form an army which would easily reduce the whole country The Emperor agreed to let him make the attempt

For the next seventeen years Pan Chao carried out this plan with unbroken success. One by one the kings of the Turkestan oases were reduced to obedience, until the whole Tarim Valley was under the peaceful rule of the Chinese viceroy In A D. 97, after reducing the last contumacious prince, Pan Chao crossed the T'ien Shan Mountains and, with an army of 70,000 men, advanced unopposed to the shores of the Caspian Sea Never before, and never since, has a Chinese army encamped almost on the frontiers of Europe. The whole stretch of country between the T'ien Shan and the Caspian submitted to the Chinese without fighting More than fifty "kings" acknowledged Chinese overlordship and sent their heirs as hostages to Lo Yang Encamped on the Caspian shore, Pan Chao despatched his envoy, Kan Ying, to enquire into the nature and state of the western world

Before recounting the embassy of Kan Ying, it is necessary to consider the state of the Near East in A D. 97 Many changes had occurred since Chang Ch'ien had first made contact with the Hellenistic world. It is at first sight surprising that Pan Chao should have been unopposed in the countries which bordered the

Parthian Empire, and which had at times owed allegiance to the King of Kings. But Parthia was then passing through an internal crisis, of which little is known. The King Pacorus had to contend against several pretenders throughout his reign, and no doubt this weakness of Parthia contributed not a little to Pan Chao's easy successes.* West of Parthia was Rome, a power which had not emerged in western Asia in Chang Chi'en's day. The Roman Empire was then at the plenitude of its power, under the Emperor Nerva. The two world empires, the Han and the Roman, were now separated only by the Caspian Sea and the Armenian mountains.

The Han history† contains an account of the western world which is undoubtedly based on the report made by Kan Ying after his return to Pan Chao's headquarters. The identification of the countries visited by the Chinese envoy has been the subject of considerable dispute, but recent studies based upon the directions given in the Han history have established that it was not the Persian Gulf, but the Black Sea, that Kan Ying reached.

After visiting An Hsi, *i e.* Parthia, which he describes as a populous land with many towns and villages, Kan Ying reached the coast of the "Great Sea" probably at a point near the modern Batum. His aim was to reach Ta Ts'in, that is to say, the Roman Empire. However, the seamen at this port warned him of the dangers of the voyage, saying:

> "This sea is very wide With a favourable wind one may cross it in three months, but if the winds are adverse the voyage may take two years. Moreover, there is about this sea something which gives people such a longing for their own country that many die of it For these reasons those who embark take at least three years' provisions. If the Han ambassador is willing to forget his family and his home, he can embark."

On hearing of these perils, Kan Ying's heart failed him, and he went no further. There is little doubt that the Parthians deliberately misled the Chinese envoy, fearing that close relations

*Sir Percy Sykes. *History of Persia* London. 1921. Vol. I Chapter XXXIII
†Hou Han Shu Chap. 118.

between China and Rome would lead to an alliance of the two great empires. Pan Chao's conquests must have seemed an alarming portent, and of the hostility of the Roman Empire, there was no doubt Nevertheless the seamen had only exaggerated, not invented the dangers of the route. From Parthia, as the Chinese learned, the sea voyage across the Black Sea led to T'iao Chih, which has now been identified as the Crimea, the Chinese name being derived from the Greek name Taurica. Thence ships coasted round to Byzantium, which the Chinese, perhaps from later information, knew as the capital of Ta Ts'in (the Roman Empire) and called An Tu. This was for long thought to be a rendering of Antioch, a confusion which led to the belief that T'iao Chih was Mesopotamia. It is now known that in the period between A.D. 196 and A.D. 330 the old Greek city of Byzantium was officially called Augusta Antonina by the Romans, and it is from the word "Antonina" in this name that "An Tu" is derived.* By various ways the Chinese in the Han period came to know much about the Roman Empire. Some of this information came from the Chinese officers whom Pan Chao sent on missions to the kingdoms of western Asia, some from merchants who came to China either by the caravan route across Central Asia, or by the sea route via India. All this information is summarised in the Hou Han Shu, or History of the Later Han Dynasty; the account of Ta Ts'in is as follows, much of it having the air of being the report made by an envoy, and his observations on the road:

> "Ta Ts'in, also called Li Chien, lies west of the sea, and is known as the Land West of the Sea [*i e.* the Black Sea and Mediterranean]. It is many thousands of *li* in extent, has more than four hundred cities, and scores of small vassal states. The walls of cities are built of stone There are chains of courier stations, all white-washed. There are cedar trees, and all kinds of woods and plants. The people cultivate the land (*i.e.* are not

*The arguments in favour of these identifications of the place names given in the Hou Han Shu are set out in an unpublished paper, *Byzantium and the way thither*, by Prof Yang Hsien-yi, to whom I am indebted for permission to use this information

nomads). They grow many crops, and plant mulberry trees. Their hair is cut short and they wear embroidered clothes. They ride in chariots. Their chariots are small, and have white awnings On leaving or approaching [a city] drums are beaten and flags and banners displayed. The circuit of the [capital] city exceeds one hundred *li*. There are five palaces in the city, each ten *li* apart. In the palaces the pillars of the halls are made of crystal, and so are the dishes on which food is served. The King goes daily to one of these palaces and transacts business. After five days he completes the round. An official is appointed who carries a bag and follows the King's chariot Those who wish to bring up some matter of business write petitions and drop them into this bag. When the King arrives at the palace, the bag is opened and the cases are judged on their rights and wrongs. The King appoints thirty-six generals who all participate in discussions of affairs of State There are officials for all kinds of State business Their Kings do not rule permanently; they always appoint worthy men as Kings; if there are ill-omened portents, or the seasons are disordered, the King is deposed and another set up. The one who has been degraded takes his dismissal in good part and shows no resentment The people are all tall and have an air comparable to those of China, and for this reason are called Big Ts'in [*i e* big Chinese, Ts'in being a name for China from the Ts'in dynasty] The land produces much gold and silver There are rare gems, including shining jade, bright pearls like the moon, and the rhinoceros hide called 'bird scaring rhinoceros hide' [apparently a magic substance], coral, amber, glass, red jade, cinnabar, and green jade They work gold thread and have embroideries and brocades of various colours. They can gild and have asbestos. They have also a fine cloth which is called 'water sheep's down,' and is made of wild silkworm cocoons They collect perfumes, decoct the juice and make gum Every foreign thing, precious or strange, is produced here

"They use gold and silver for money Ten pieces of silver money equal one of gold. They trade with India and Parthia by the sea route, making a ten-fold profit. They are upright

traders, and have fixed prices. Corn and food are always cheap; so that the country is very wealthy. When neighbouring States send embassies, on arrival at the frontier they are mounted on post horses and sent to the royal capital. When they arrive the King makes them presents of gold.

"Their King has long wished to send an embassy to China, but as the Parthians desire to obtain Chinese silks for re-sale to the people of Ta Ts'in, they block the way so that none could get through. In the reign of Huan Ti [A.D 166] the King of Ta Ts'in, An Tun, sent an embassy which arrived at Jih Nan [Tong King] beyond the frontier They presented ivory, rhinoceros horn, and tortoise shell. The things they offered were in no way precious or rare, and it was suspected that they had been exchanged. This was the first time contact had been made. Some say that to the west of this country there are vaporous flowing sands near to the dwelling place of Hsi Wang Mu [a legendary deity of the West] nearly at the place where the sun sets The Han Shu [*i.e.* Ch'ien Han Shu, the History of the Early Han Dynasty] says that more than 200 days' journey west of T'iao Chih you come to the place where the sun sets, but this is not in accord with the present book; for in former times Han envoys all turned back at Wu I [a mountain range in Parthia], none reached T'iao Chih. Another account says that from Parthia the land route winds round north of the sea [*i.e.* the Black Sea] coming out to the west of the sea at Ta Ts'in. The population is thick and continuous. Every ten *li* there is a pavilion, every thirty *li*, a posting station. There is no danger of thieves or bandits; yet on the road there are many ferocious tigers and lions which are a danger to travellers. Unless travelling in companies of over a hundred carrying arms they would be devoured. It is also said that there is a very high bridge of several hundred *li* by which one can cross to the countries north of the sea. They produce many strange and precious gems and stones and all kinds of rarities, but many of them are not verified and are therefore not recorded."

It is not clear from this account whether the royal city with five palaces is Rome or Constantinople, or perhaps a confusion of

the two. The account of the political system is clearly a garbled description of the annual Consuls of the Roman Republic. The Embassy from An Tun was probably not really an embassy, but a trading expedition by Alexandrine Greeks, who passed themselves off as ambassadors when they arrived on the confines of China An Tun is Marcus Aurelius Antoninus It is clear that, blocked by the Parthians, the Romans were trying to open up a sea route to the land of Serica, and it is at least possible that the visitors to Tong King carried letters of credence. The legend about the place where the sun sets, two hundred days west of the Black Sea, may possibly be a faint echo of a description of the Atlantic seaboard of Europe, the end of the world to the Greeks. The story about the bridge over the sea is probably also an echo of Xerxes' bridge of boats across the Hellespont.

After the second century A.D. intercourse between China and Rome seems to have become more difficult, perhaps because the Chinese grip on Central Asia was relaxed. Pan Chao himself returned to China in A D. 102, after thirty years of service in the west. He reached Lo Yang, the capital, after his petition to be allowed to return had been granted at the request of his equally famous sister, Pan Ch'ao, usually considered to be the foremost woman scholar in Chinese history One month after he reached home Pan Chao died. It would seem that even to-day he is not forgotten in Central Asia, for at Kashgar there are the "Springs of Pan Chao," said to have been miraculously discovered by the great administrator.*

*Sir Percy Sykes, *op cit* Vol. I, page 387.

Chapter IX

LITERATURE AND RELIGION IN THE HAN PERIOD

IN 191 B.C., in the reign of Hui Ti, second sovereign of the Han dynasty, the decree proscribing the teaching of the "Hundred Schools" and the literature of the feudal period was formally repealed. Although the prohibition of ancient learning had not been effective since the fall of the Ch'in dynasty in 209 B.C., eighteen years before, the repeal of this law is a convenient starting point for a review of the great literary achievements of the Han scholars. From this date began the painful task of research and criticism which resurrected a large part of the proscribed books and preserved for posterity the ancient texts upon which almost all knowledge of the feudal period still relies.

The restoration of letters was at first the work of private scholars, and did not receive the patronage or support of the imperial Court. We have seen that the founder of the new dynasty, Liu Pang, canonised as the Emperor Kao Tsu, the "High Ancestor" was an unlettered peasant, who despised and ignored such scholars as were to be found at his Court. Most of the prominent men in his service were equally uneducated, and of those who had some pretensions to learning, very few belonged to the Confucian school. The complexion of the early Han Court was, on the contrary, more Taoist than Confucian. The Empress Tou, wife of Hsiao Wên, who exercised great influence during the reigns of her husband and son, and did not die till her grandson, the Emperor Wu, had been some years on the throne, was a convinced Taoist; and used her influence to frustrate the Emperor Wu's first attempt to confer favour on the Confucian scholars.

Although by contrast to his predecessors, the Emperor Wu has often been regarded as a patron of Confucianism; he was eclectic in his religious beliefs, conferring the highest favour on the professors of magical arts who had certainly no common ground with the scholars. Nevertheless, it was during his reign (141-87 B.C.) that the Confucian school laid the foundations of its future exclusive domination. There can be little doubt that the ultimate

victory of the Confucians was due to their antiquarian labours in restoring the lost literature of the feudal age. Confucius himself had laid the greatest stress on the duty of preserving and cultivating the ancient literature. His followers in Han times devoted their researches to this purpose, and it is primarily to their work that we owe any knowledge of the ancient texts

This interest in the past gave the Confucians a notable advantage over the rival schools. The Taoists had not the same care for ancient books, and tended in the new atmosphere of religious innovation to associate themselves with the superstitious practices of the magical cults then in favour. In consequence, as time passed scholarship became more and more identified with Confucianism, and Taoism, seeing analogies between the mystical language of its ancient philosophers and the magical receipts of the fashionable cults, was slowly modified into a popular religion, a synthesis of all the varied superstitions and local cults of the expanding empire.

Confucianism, originally the ethical and philosophic system of an aristocratic school, was itself transformed in the new atmosphere of the Han period. The search for a principle of moral authority which had occupied the philosophers of the "Hundred Schools" was no longer the dominant intellectual problem of the new empire. Authority had now no need of moral foundations. The problem to which the varying teachers of the feudal age had propounded such different answers had been solved over their heads by the rude violence of less educated men. The centralised empire was now a fact, power emanated from a single supreme source, government was vigorous and stable Under these conditions Confucianism slowly acquired a new authoritative, religious tone, and, as the Confucian scholars were the great doctors of ancient learning, their claims were buttressed by an appeal to precedent, always powerful to the Chinese mind.

Moreover, the men of the Han age were intensely interested in past history. After the storms of the great revolution the dead world of feudalism appealed to them with all the romance of a half forgotten civilisation. The Confucian scholars had taken the chief part in the restoration of the lost literature, and they naturally tended to magnify the importance of their own school

and to devote their main efforts to its literature Consequently, the Han age saw the past through Confucian spectacles, coloured, moreover, by the ideas current in the new empire. When history came to be written, the Han scholars drew upon Confucian sources—necessarily, for the Confucians were the great preservers of ancient books—and interpreted the ancient texts in accordance with ideas peculiar to their school. The legends of the remote past were accepted without cavil. Yao and Shun were as historical as the feudal kings, and were represented as ruling an empire as united and as extensive as that of the Emperor Wu himself. This belief in the ancient unity of the empire, to which feudalism had succeeded as a period of decay, was a reflection of contemporary political ideas, which accepted the new unified empire as a restoration of the conditions prevailing under the Sage Kings. It was, besides, entirely in consonance with Chinese mental habits to represent a revolutionary innovation as a return to past precedents.

The Han scholars are thus dangerous guides to any true understanding of the feudal and prehistoric past. But they were misinterpreters, not falsifiers. They treated every ancient text with reverence, transmitted it with care, without additions or corrections. It is true that they were sometimes misled into accepting texts of doubtful authenticity, which subsequent scholarship has revealed to be corrupt or interpolated, but in general they confined their emendations and often erroneous explanations to a commentary kept strictly apart from the ancient text itself. This tradition has persisted throughout Chinese literary history. A text was regarded as sacred, not to be altered, nor to be emended, except in a definitely separated commentary.

For these reasons the ancient Chinese literature has been transmitted in a manner wholly unlike that by which the western world has received the records of the classical age. There are hardly any copies of Chinese books extant which date earlier than the Sung period (A.D. 960-1280), nor are there stone inscriptions*

*The well-known inscribed stone drums, now preserved in the Temple of Confucius at Peking, are monuments of the feudal period. The exact date of these drums is disputed, but the inscription refers to a hunting expedition of a King of Ch'in, and has no bearing on classical texts.

of real antiquity to confirm and check the work of the copyists China, however, has never known a "dark age" such as that which overwhelmed the civilisation of the west. There have been great literary catastrophes, such as the Burning of the Books, but no complete break in the continuity of the literary tradition. From century to century, from the time of Confucius to the present day, the Chinese scholars have faithfully reproduced the old books, neither adding to nor paraphrasing the original text. Books have been lost, and on occasion "rediscovered" in a form which is far from authentic, composed of the odd citations found in extant literature, but the keen criticism of Chinese scholarship, a critical faculty which may be traced back to the laborious work of restoring the feudal literature in the Han period, has always been quick to detect and denounce forgery

The absence of ancient copies on stone or brick, and the importance and reverence which Chinese scholars have paid to their ancient literature has stimulated the art of scholastic criticism in all ages. The Chinese scholars discovered and practised the higher criticism centuries before the west On the whole they tended to be more severe on the extant books than their present successors. This hard discipline had invaluable results. It not only preserved, in all its archaic difficulty, the most ancient literature, but it trained up a school of historians who have recorded the events of two thousand years with an attention to chronology and a sober abstention from the fanciful and the heroic, which has no parallel in any other eastern literature, and has only been equalled in the west since the Renaissance. This historical tradition arose in the Han period, and was originated by the famous Ssŭ-ma Ch'ien, whose work has served as a model for all succeeding ages.

It would be impossible, in the short space of one chapter, to give a detailed account of all the Han scholars who laboured at the restoration of the classical books, nor is it always certain to whom the preservation of the most famous books is due. Mao Ch'ang, who lived under the first Han Emperors, edited the Odes, or *Shih Ching*, the anthology of ancient poems and folk songs which Confucius esteemed so highly. The *Shih Ching*, with the commentary of Mao Ch'ang, is universally recognised as one

of the most pure and uncorrupted of the texts which have survived from antiquity. As the Odes are the oldest writings in the Chinese language, the importance of Mao's work cannot be over-estimated.

The preservation of the oldest historical text, the *Shu Ching*, was the work of more than one scholar. The so-called "new" text was preserved by Fu Shêng, an aged member of the Ch'in academy of Scholars of Great Learning, who, surviving till the reign of Hsiao Wên (179-157 B.C.), wrote down twenty-nine chapters, which, according to one account, he remembered by heart. It is also recorded that he found this fragment in the ruins of his old home, where he had hidden it in the time of Shih Huang Ti. These stories of books hidden in walls are common at this period, but in all probability they are merely romantic tales, seeking to prove that the book in question was an undoubted survival from the feudal age. The *Shu Ching* also exists in another form, the "old" text, which was supposed to have been found in the wall of Confucius' house, and edited by his descendant, K'ung An-kuo, in the reign of the Emperor Wu (141-87 B.C.). The authenticity of the "old" text as at present extant has been disputed by Chinese scholars, and also by European sinologists. The question is complicated, and the true history of the text will perhaps never be known The additional books found in the "old" text, which are usually regarded as forgeries, are certainly old texts, as their style and phraseology show. It is perhaps most likely that several versions of these old stories existed in Chou times, some esteemed by one school, and others upheld by their rivals. K'ung An-kuo's "old" text was not in favour with the Han Confucians, as Ssŭ-ma Ch'ien's sparing use of it proves It does not however follow that the texts are forgeries of the 5th century A.D.

The distinction between "new" and "old" texts was due to the change in the system of writing introduced under the Ch'in sovereigns The archaic characters had already given place, at some date in the Chou period to the type known as "great seal" and this in turn had been modified to the style now known as "lesser seal." In the Ch'in dynasty an important advance was made. The ancient books had been written on strips of smoothed bamboo, and inscribed with a sharp stylus, but in the reign

of Shih Huang Ti the brush pen was invented, traditionally by the general Mêng T'ien. The use of silk as a material combined with the brush pen as an instrument made a notable change in the style of the characters. The stiff angular forms of "lesser seal" characters were modified into the easy curves and simplified styles suited to the use of the brush. This was the "new" style, in which Fu Shêng's *Shu Ching* was written, and which has ever since, with slight modifications, been in use. The "old" style, in which K'ung An-kuo's supposed find was said to have been written, was already becoming forgotten and disused by the reign of the Emperor Wu.

Two renowned scholars of the 1st century B.C., Liu Hsiang and his son, Liu Hsin, distant connections of the imperial family, were responsible for the publication of the *Chan Kuo Tsê*, an important source for the period of the Warring States. They also worked on the *I Ching*, or Book of Changes, and popularised the *Tso Chuan*, regarded as a commentary on the *Ch'un Ch'iu*, though much of it has no relation to that work. Liu Hsin was a supporter of Wang Mang, the usurper, and has been attacked by Chinese scholars on that account, but his work is now accepted as genuine. Hsiu Hsin, a scholar of the later Han, *circa* A.D. 100, compiled the *Shuo Wên*, the first dictionary of the language to employ the system of identifying and grouping the different classes of characters by their "radicals," i.e. the part of the character which broadly indicates the sense, a system which is still in vogue. Hsiu Hsin's identifications were not in accordance with the oldest meaning of many characters, as a study of the inscriptions on oracle bones and ancient bronzes has revealed, but his work helped to classify and standardise the manner of writing the script, as well as to reveal the meaning attached to many ancient words in Han times.

In another field of study, the preservation of Taoist doctrines, the name of Liu An, King of Huai Nan, is supreme. Liu An, who is generally known as Huai Nan Tzŭ, "the philosopher of Huai Nan," was the grandson of the Emperor Han Kao Tsu (Liu Pang), and feudal sovereign of Huai Nan, a region between the rivers Huai and Yangtze. He was an ardent Taoist, and composed a book in which the doctrines of the *Tao Tê Ching* and

Chuang Tzŭ are expounded In Huai Nan Tzŭ the transition of Taoism from a pure mystical philosophy to a religion can be observed. The allegories in which Chuang Tzŭ represented the sages who had comprehended the Tao as immune from the cares of the world, riding upon the clouds, and living without sustenance as hermits upon the mountain tops, are now beginning to be accepted as realities, possible to those who had acquired the supreme knowledge. Huai Nan Tzŭ, in tune with the spirit of his age (he was a contemporary of the Emperor Wu), was soaked in the supernatural and his book did much to transform Taoism into a religious cult

The declining years of the Chou dynasty, the period of the Warring States, has come down in literary history as the age of philosophers; the Han dynasty, the age of the first unified empire, is equally celebrated for its historians The Chinese world had emerged from the feudal anarchy into the comparatively calm and assured era of the united empire; a period of stability in which scholars could reflect upon the past and trace the steps by which so vast a revolution had come about The work of restoring the proscribed literature had already roused a critical interest in the customs and traditions relating to the early Chou period and the dimly remembered dynasties which had gone before The time was ripe for a great work of historical research which should gather up the fragmentary and contradictory records of the feudal and legendary age and present, for the first time, a connected and comprehensive history of the Chinese world This was the task which was undertaken and completed by two scholars, father and son, in the reign of the Emperor Wu.

Their joint work, the *Shih Chi* or Historical Memoirs* was planned and begun by Ssŭ-ma T'an, the father, and completed after the death of the elder man by Ssŭ-ma Ch'ien, his son As by far the larger part of the book was the work of the son, it is Ssŭ-ma Ch'ien who is usually regarded as the real author. The *Shih Chi*, as the model which all later historians copied, and as one of the principal sources for the history of ancient China, and also

*So translated by Chavannes *op cit* Professor Hu Shih considers that "Memoirs of a Historian" would be more correct (*Development of the Logical Method in Ancient China*).

for the early Han period, is one of the most famous and valuable works in the Chinese literature. It is therefore of importance to consider what manner of man Ssŭ-ma Ch'ien was, and why he was qualified to write this monumental book.*

Ssŭ-ma Ch'ien was born about 136 B.C and died early in the reign of Chao Ti, successor of the Emperor Wu, about 85 B.C. Although the exact dates of his birth and death are not known, many details of his life have been preserved, partly in his own writings, and partly in the notices devoted to him by later historians The Ssŭ-ma family were of aristocratic origin as their name—meaning "commander of horse," a military title—denotes. They descended from a general of the Ch'in state, who had conquered Shu, or Western Szechuan for that country. They were thus natives of Ch'in, the western state which had been considered half barbarous in the early Chou period. The Ssŭ-ma came from the eastern part of Ch'in, the district now called Han Ch'êng Hsien on the Shensi bank of the Yellow River. This district had formerly been part of the Tsin state, until it was conquered by Ch'in Ssŭ-ma T'an, and after his death, Ssŭ-ma Ch'ien himself occupied, at the Han Court, the post of Duke Grand Astrologer, a position which was not so important as the high sounding title might suggest. As Ssŭ-ma Ch'ien himself says, the Grand Astrologer was not a great officer, indeed, his functions were confined to matters relating to the observation of the heavens and the calendar It is possible that the title indicates that this position had formerly been more honourable, but at the court of the Emperor Wu it was something of a sinecure. However, the Grand Astrologer had one advantage eminently useful for an historian, he had access to the imperial library and archives in which were stored not only copies of every historical record which survived, but also the vast accumulation of official reports to the throne, decrees and ordinances.

Ssŭ-ma Ch'ien, before inheriting his father's office, had travelled widely. His youth was spent at the ancestral home in Shensi, where he was educated, and also engaged in the homely pursuits of agriculture and pasturage. At the age of twenty, he set out on a

*The *Shih Chi* contains one hundred and thirty chapters, of which ten are now lost

long series of travels, a kind of grand tour of the empire, which it would seem was regarded as part of the education of a young man, much as the tour of Europe formed the last stage in the education of an 18th century gentleman. Ssŭ-ma Ch'ien visited the south-east of China, going as far as the modern Chekiang, then recently incorporated in the Han dominions. There, near the modern Hang Chou, he saw the alleged tomb of Yao, and the inscriptions set up by Ch'in Shih Huang Ti, which he copied and later included in his history. Travelling up the Yangtze he visited the modern provinces of Kiangsi and Hunan, the extreme southern limit of the civilised world in his time, and took care to see all the places famous in myth or history

Returning across central China he made a devout pilgrimage to Lu and Ch'i—the modern Shantung—which had been the intellectual centres of the "Hundred Schools." At Chu Fou he saw the tomb and house of Confucius, where the carriage and other personal relics of the sage were still preserved He made a considerable stay in these famous cities of the east, and no doubt profited by the occasion to inspect the libraries of the scholars who resided there. Returning to the court, Ch'ang An, in Shensi, he received an official post and was shortly afterwards sent on a government mission to the newly conquered countries of the south-west. He therefore visited Szechuan, including the western region of the upper Yangtze, and penetrated far into Yunnan to the district of Ta Li, then the furthest point known to the Chinese. Ssŭ-ma Ch'ien was thus more than a traveller, he was an explorer.

In later years, though he does not say on what occasion, he travelled in north-western China, the modern Kansu and the region of Inner Mongolia around the great bend of the Yellow River. There he followed the course of the Great Wall as far east as the modern province of Hopei (Chihli). He accompanied the Emperor on his religious pilgrimages to Mt T'ai Shan in Shantung, and was present on the famous occasion (109 B C) when the Emperor, passing the breach where the Yellow River had broken its banks, personally supervised the work of closing the gap and set the example by carrying bundles of faggots himself, followed by the whole court. Ssŭ-ma Ch'ien had thus

travelled in all parts of the Han Empire, and had been an eye-witness of many of the most important events at the Court of the Emperor Wu.

Of his official life, less is known. In 104 B C. he was one of the scholars charged with the great reform of the calendar, a matter of religious significance to the men of his day. In 99 B.C. there occurred the tragedy which darkened his later years, but which does great honour to his character In that year, in the course of the long wars against the Hsiung Nu, the celebrated general Li Kuang-li had invaded the enemy country in the direction of the eastern end of the T'ien Shan Mountains Li Ling, grandson of another Han general,* had requested permission to make a diversion with 5,000 men in the direction of Hami The Emperor had only consented to this after much persuasion, and when in the event, Li Ling, encountering unexpectedly the full force of the Hsiung Nu, was compelled to surrender after a heroic but vain retreat, the imperial wrath was unbounded.

The flatterers at Court, men whom, as Ssŭ-ma Ch'ien says, took good care not to expose themselves to the perils of a campaign, fanned the Emperor's rage by condemning Li Ling as loudly as they had formerly praised him Only Ssŭ-ma Ch'ien, though not an intimate friend of the luckless general, had the courage to take his part He pointed out that the disaster had occurred because Li Ling had not been supported, he recalled that the general had made a desperate stand, executed an heroic retreat, and only yielded when his men, trapped in a gorge in the mountains, had shot away all their arrows, and were reduced to fighting with their broken spear shafts. Few generals in the past, he declared, had fought so well as Li Ling, and if he had been compelled to surrender rather than perish on the field, it was doubtless because he hoped to find another occasion on which to avenge his misfortune.

Unfortunately, the Emperor did not accept this generous defence in the manner it was intended. He suspected that Ssŭ-ma Ch'ien meant to cast the blame on Li Kuang-li, who being himself in difficulties, had been unable to support Li Ling. Li Kuang-li,

*Li Kuang, from whom the imperial house of the T'ang dynasty claimed to be descended.

whose sister was the imperial favourite of the moment, was then high in favour. More enraged than ever at what he considered to be a covert criticism of his favourite, the Emperor caused Ssŭ-ma Ch'ien to be handed over to the judges on the grave charge of attempting to deceive the Throne The judges subserviently condemned the historian to the penalty of castration. According to the laws then in force Ssŭ-ma Ch'ien could have escaped his penalty by making a heavy payment to the government, but, as his family were not wealthy and his friends, fearing the enmity of the powerful faction of Li Kuang-li, deserted him, he suffered the penalty to which he had been so unjustly sentenced.

This event embittered the last years of Ssŭ-ma Ch'ien and sharpened his hostility to the Emperor. Although in later years he was given the important post of *chung shu ling*, a secretary whose functions included the supervision of all reports to the throne and decrees issued, he harboured a lasting enmity to his sovereign, and in his chapters on the events of this reign there are many covert satires against the Emperor Wu.*

The story of Ssŭ-ma Ch'ien's disgrace is told by himself in a letter to his friend, Jên An, which was also written in tragic circumstances. Jên An, a military officer, had been compromised in the fatal intrigue towards the end of the reign of the Emperor which cost the life of the Crown Prince and many notables † He appealed to Ssŭ-ma Ch'ien for help, and the letter is the historian's reply. The sense is concealed, but has been regarded as a refusal justified by Ssŭ-ma Ch'ien's lack of influence as a condemned and mutilated man. In recounting his own misfortunes Ssŭ-ma Ch'ien

*The chapter which was devoted to the reign of the Emperor Wu itself is missing, no doubt because it was too hostile to be published even in later years. In his Chapters on the sacrifices, and on economic matters (Fêng Shan and P'ing Chun), and also in the biographies of his contemporaries, Ssŭ-ma Ch'ien uses very plain language

†The Crown Prince was accused by his enemies of having practised magical arts to shorten his father's life. They obtained leave to search his palace, and produced images (which they had previously placed there) which the Prince was accused of using in his nefarious rites. The Crown Prince attempted to flee, and on his way tried to obtain the support of Jên An, commanding part of the garrison stationed near the capital. Jên An did not aid him, but was later accused of "sitting on the fence," waiting to see what the outcome of the trouble would be.

advances as the reason why he had submitted rather than take his life, his determination to finish his history. Covertly, therefore he suggests that Jên An, who was not engaged on similar literary work, had no reason to prefer dishonour to death. Jên An, in fact, was executed.*

The *Shih Chi*, the great historical work which was composed by Ssŭ-ma Ch'ien during the course of his busy life, is in reality less his original work than a compilation of all the ancient historical material available. He reproduces integrally the texts of ancient annalists, modern writers, and Government documents. It is a method wholly unlike that which historians in the west have followed Ssŭ-ma Ch'ien does not cite his authorities, he copies them down and includes their work in his own compilation. In the early chapters he uses the *Shu Ching*, sometimes slightly altering the archaic language to make it more intelligible. In the feudal period he quotes, or rather cites, the *Ch'un Ch'iu*, and the Annals of Ch'in (which alone wholly survived the proscription of history) and also fragments from the annals of other feudal states, which are now lost. Other works, some of which have disappeared, are used to cover the Ch'in and early Han period Ssŭ-ma Ch'ien rarely writes himself, invariably using the existing material. It is only when he is actually dealing with contemporary matters, and the biographies of famous men, where his predecessors had not already recorded events, that he himself writes original history. This method, strange to western ideas, has merits and drawbacks. It lacks, too often, the dramatic quality found in such historians as Herodotus. There is no unity of style, for Ssŭ-ma Ch'ien has included documents of the most diverse ages, some written in terse archaic language, others in the polished periods of his own day. Furthermore, his attitude to the legends of the heroic age is uncritical. Yao and Shun are treated as historical sovereigns, and where the legends concerning them are contradictory Ssŭ-ma Ch'ien includes all the accounts without expressing any judgment upon their authenticity.

Even when dealing with an intensely dramatic situation, such as the flight of Liu Pang after sustaining a great defeat at the

*This letter is translated in full in Chavannes's translation of the *Shih Chi*. *Op. cit*

hands of his rival, Hsiang Yü, Ssŭ-ma Ch'ien, compiling from the lost *Ch'u Han Ch'un Ch'iu,* a work by the eye-witness Lu Chia, makes no attempt to dramatise the narrative or comment upon the facts:

" . . . At P'êng Ch'êng, in the middle of the day [Hsiang Yü] inflicted a great defeat on the army of Han; all the soldiers of Han fled, they threw themselves one after another into the rivers Ku and Ssŭ; more than 100,000 of the soldiers of Han were slain. The army of Han fled southwards towards the mountains, Ch'u [Hsiang Yü] pursued them still fighting and arrived to the east of Ling Pi on the banks of the river Sui. The army of Han fell back, pressed by Ch'u; more than 100,000 of the Han soldiers perished together, drowned in the river Sui. The water of the river Sui was dammed up [by their bodies]. Hsiang Yü surrounded the King of Han [Liu Pang] with a triple ring; at this moment a great north-west wind arose, tearing up the trees, overthrowing houses, and raising clouds of sand and dust; the sky was darkened, and it was night in broad daytime.* The hurricane blew straight towards the army of Ch'u. It was thrown into confusion, and the ranks were broken and dispersed The King of Han was then able to flee secretly with a few tens of horsemen. He planned to pass by P'ei [his native place] to rescue his family, and then escape to the west. Ch'u for his part sent men to pursue him to P'ei and to capture the family of the King of Han. The members of this family had fled and did not meet the King of Han. The King of Han found on the way Hsiao Hui and the Princess Yuan of Lu.† He took them into his chariot As the horsemen of Ch'u

*This was not a miracle, but a severe north China dust storm. It is not uncommon, during the height of such storms, to find the air so thick with fine particles of dust, that it is impossible to see more than two or three yards. It is rare to experience so violent a dust storm at a place as far south as P'êng Ch'êng, which is in northern Kiangsu, but there is some historical evidence tending to prove that these storms were more violent in past times than those which occur to-day.

†Hsiao Hui and the Princess of Lu were the son and daughter of Liu Pang, at this time mere children Ssŭ-ma Ch'ien uses the posthumous titles by which they were known in his own time, for Hsiao Hui was the successor of Han Kao Tsu (Liu Pang) His personal name was Ying

pursued hard after them, and they were closely pressed, he threw Hsiao Hui and the Princess of Lu out of the chariot. The governor of T'êng [Hsia-hou Ying, one of his officers] dismounted, and put them back in the chariot This scene was repeated three times. Then the governor of T'êng said: 'Although we are closely pursued, we cannot go any faster, what is the use of abandoning them?' Thus, they were able to escape "

Ssŭ-ma Ch'ien adds no word of comment upon the inhumanity of Liu Pang, prepared to abandon his children to facilitate his own escape. He proceeds tranquilly with his narrative

Fig. 36, part of a battle scene which may represent one of the episodes of this war, occurs in the bas-reliefs of the Wu tombs in Shantung, which date from the 2nd century A.D. (see Chapter X). The combatants, who are fiercely disputing the passage of a river, are armed with the iron swords with ringed pommels which are known to have been in use in Han times. One such sword in the possession of Professor C G Seligman is 2 ft. 10 ins. in length from the ring to the tip, which is still protected by the bronze chape of the original scabbard

If the *Shih Chi* thus lacks qualities which western readers are accustomed to expect in historical writing, it has certain outstanding merits, not always found in ancient western literature. Firstly, it was a work based upon a vast research Ssŭ-ma Ch'ien tells us that he had read practically every book extant in his day, and he had used to the full his opportunities of investigating the imperial archives He includes not only every work of antiquity which was considered genuine, but also extracts from official papers. For example, Chang Ch'ien's report on his adventurous journey to Bactria is given in the words of the traveller himself. The *Shih Chi* are thus a veritable encyclopædia of ancient literature, a touchstone by which the authenticity of other versions can be tested by the citations which the historian included in his book.

Moreover, as a consequence of Ssŭ-ma Ch'ien's own travels he had developed a keen interest in matters not strictly historical. Although, due to his method of compilation, he never uses his

FIG 36. *Part of bas-relief representing a Battle on a Bridge. Han Dynasty.*

own geographical knowledge to elucidate the text, he wrote monographs on all the countries newly conquered or discovered. He has chapters on the Hsiung Nu, the south-western barbarians, the western kingdoms of Central Asia and Bactria, on Korea, and southern China. He tells us that it was in consequence of his experiences at the repairing of the breach in the Yellow River dyke, that he decided to write a chapter on the rivers and canals of the empire, an invaluable record of the river conservancy and irrigation schemes carried out by the Emperor Wu He also wrote the chapter on economic policy which has been cited in Chapter VII. His position as Grand Astrologer gave him an intimate knowledge of the religious observances at the Court, and in his chapter "Fêng Shan" he has described the innovations made by the Emperor and the careers of the magicians who exercised so great an influence at Court It is particularly interesting to see that Ssŭ-ma Ch'ien himself was by no means the dupe of their arts, and regarded their pretensions with profound scepticism. Other branches of science, as known to the Han scholars, are accorded equal treatment. There are chapters on astrology, the calendar, music and divination. His biographies of famous men cover not only the great names of the past and contemporary times, but also the famous comedians, celebrated assassins, brigands, court favourites, generals, poets, and scholars The *Shih Chi* is a mine of information on every aspect of the Han civilisation, and it set a standard of historical writing which has been imitated throughout the course of Chinese history.

In the Later Han period the historical work of Ssŭ-ma Ch'ien was carried on by three members of a famous family, the Pan The exploits of Pan Chao as administrator and conqueror in the remote countries of the west have been mentioned in Chapter VIII; the stay-at-home members of his family were no less famous—indeed, to the Chinese far more famous—in the field of letters Pan Piao (A.D. 3-54) was the father of these remarkable children. Himself a scholar of repute, he, like Ssŭ-ma T'an, began to assemble the materials for the history which his children completed after his death. Pan Chao, the general, was the second son, his elder brother, Pan Ku (d. A.D 92), is the author of the *Ch'ien Han Shu* or History of the Early Han dynasty, a work which

follows the plan laid down by Ssŭ-ma Ch'ien, with the difference that as Pan Ku wrote with the knowledge and authority of the Emperor, his book stops at the fall of the Early Han dynasty, and does not deal with contemporary events Pan Ku did not live to complete the book. Already once accused and imprisoned on the charge of falsifying history (a charge trumped up by his political opponents) he was later involved in the fall of the leading minister of his day, and died in prison His book was completed by his sister, Pan Ch'ao, the first and the most famous woman scholar in Chinese history.*

Although the Han scholars and historians were keenly interested in the past, and devoted their labours to perpetuating the ancient literature, the Han period, a post revolutionary era, was a time of change and innovation. The sweeping political and social changes brought about by the fall of feudalism were necessarily reflected in the sphere of religion. The old cult had become corrupted and devitalised by the decay of the royal power in the later Chou epoch. New deities, hitherto worshipped only at local centres, became popular throughout the unified empire The emperors strove to fortify their weak title to the throne by religious innovations, and the scholars sought in religious sanctions a check to control the supreme power of the sovereign.

The religious system of the Han period was a fusion of two distinct elements. On the one hand there were the local cults, now spread widely through the empire, and enjoying popular favour and imperial patronage; on the other there was the court cult, derived from the ancient religion of the Chou period, but enriched by rites and ceremonies designed to enhance the prestige of the throne The court cult reflects the great paradox of the Han political system; the immensely increased power of the unique, autocratic monarch, and the insecurity of the imperial family's tenure of the throne The fall of the aristocracy left the Emperor as the sole source of authority. His power was limitless, his authority reached to the confines of the known world As against this his family had no sound title to the throne. They were

*Pan Ch'ao's poems have been translated and her biography traced in *Pan Chao*, by Nancy Lee Swann, New York, 1932. The Ch'ien Han Shu has been translated in part by Professor H H Dubs

not of divine descent, but, as everyone knew, the posterity of a peasant adventurer. It was true that they had "received the Mandate of Heaven," but this was an uneasy title, revocable at the will of Heaven, perhaps to be bestowed on some other family equally humble in origin. In fact the Han house were constantly menaced by the ambitions of the consort families, the clansmen of the empresses, who were well placed to snatch the crown from a weak or infant Emperor.

In feudal times the situation had been exactly opposite. Then the ruler found his power limited at every turn by "those who were doubly subjects," the heads of the aristocratic clans, too powerful to be exterminated if they conspired or rebelled, always prepared to seek refuge at a rival court beyond the authority of the ruler. On the other hand, the royal and princely houses enjoyed an unmatched prestige. They were the posterity of gods and heroes. No man dreamed of displacing them, for sovereignty was the prerogative of these divine families, beyond the ambition of lesser men.* Under the empire all this was changed. There was no place of refuge for the subject who had incurred the imperial wrath, no clan sufficiently powerful to withstand his authority.

In the development of the state cult, the worship of T'ien (Heaven) played a dominant part. T'ien (Heaven) was personified as Shang Ti, the Supreme Ancestor† of the created world, the ruler of the seasons, who delegated his power on earth to the Emperor, the Son of Heaven The Confucian scholars in the Han age were sedulous in their efforts to foster the cult of Heaven, the supreme power which could hold in awe the mighty autocrat of the empire They interpreted the ancient legends in accordance with this conception Ignoring, or at least not emphasising, the fact that the oldest literature mentioned other deities as co-equal with Heaven (notably Hou T'u, "He who governs the Earth,"

*It is true that two ruling houses were dethroned. That of Tsin, at the partition of the old kingdom into three states (453 B C.), and the old house of Ch'i But in both these cases the usurpers were also of high descent, whereas the fallen rulers were not of the highest descent—the royal house of Chou itself The collateral branches of that house in Lu and Yen remained on the throne long after their power had wholly passed into the hands of the nobility.

†"*Ti*" in the Ch'in and subsequent dynasties was used as the imperial title, but anciently this word was reserved for deities, the highest title used by men being *wang*, king, which, in later times came to be equivalent to prince.

and Ti, the Earth itself), they developed a theology of Heaven which exalted this supreme deity above all others.

Heaven, the presiding deity, rewarded virtue with auspicious signs, prosperous seasons, and peace. The wrath of Heaven, excited by evil conduct on the part of the ruler, was manifested by warnings and catastrophes Such were eclipses of the sun, floods, drought, earthquakes, and plagues of locusts. The culminating punishment of a ruler's ill-conduct was the withdrawal of the "mandate of Heaven," and the fall of his dynasty to make way for another family. This deity stood in a peculiar relation to the Emperor, who alone had the right to perform sacrifices to Heaven. It was his virtue which was rewarded by prosperity, his vices which were punished by calamities The Emperor thus bore the heavy responsibility of securing, by his virtue, the general well-being of the world; and equally he was to blame if by his misconduct he called down the anger of Heaven upon society in general. This theory was admirably suited to its purpose of inculcating a sense of moral responsibility in an otherwise uncontrolled autocrat.

There were other elements in the Han state cult which were of less ancient origin and derived from a different cosmogony. The theory of the Five Elements does not seem to be older than the late Chou era, and is attributed to the speculations of a certain Tsou Yen, a contemporary of King Hui of Wei (370-335 B.C.). The Five Elements were Earth, Wood, Metal, Fire and Water, mystic powers which had correspondences with the colours, the cyclic characters of the calendar, the points of the compass and the notes of the musical scale. They were a manifestation of the power and operation of the Yang and the Yin, the alternating forces expressive of light and darkness, birth and decay, male and female. These powers, which in their combined operation form the Tao, the Way, the great principle of the universe, are the mainspring of every activity, the mechanism of constant change and balance which maintains the harmony of the cosmos. They are symbolised by that geometrical design devised by the Chinese, the circle divided into two equal parts by a curved line (see Chap. II, Fig. 5), representing equilibrium maintained by the ceaseless flux of two balanced forces

The Five Elements are the manifestations of the Yin and the Yang. They form a cycle which constantly renews itself. Earth is vanquished by Wood, which yields to Metal, which succumbs to Fire, which is quenched by Water, which in turn is overcome by Earth, so renewing the cycle.* From this theory was derived a system of beliefs governing the rites and ceremonies of court worship. It was held that each dynasty had reigned by virtue of one of the Elements, and had fallen when the predominance passed to the succeeding element. The Ch'in had claimed to rule by Water, hence the virtue of the Han was Earth, its colour Yellow, its direction North. In Han times this theory was further elaborated, though the innovations were not regarded as such, but attributed to ancient lore. Each of the elements was now controlled by a celestial ruler, Yellow, Green, White, Red and Black respectively The Black Emperor seems to have been added by Kao Tsu himself. Ssŭ-ma Ch'ien recounts that in 205 B.C. Kao Tsu (Liu Pang) asked the names of the celestial Emperors to whom the Ch'in sovereigns had sacrificed.

> "They answered. The four Emperors are the White, the Green, the Yellow and the Red. Kao Tsu replied· 'I have heard it said that there are five celestial Emperors, but here are only four, how is that?'
>
> "No one knowing the explanation, Kao Tsu then said. 'I know. It is because they waited for me to make the complete number five.' Then he instituted the sacrifice to the Black Emperor, and gave to his sanctuary the name of the sacred place of the North."

Under the reign of the Emperor Wu a further addition to the pantheon was made. A certain Miu Chi, a man from the eastern provinces, where many local deities were held in honour, petitioned the Emperor to institute sacrifices to T'ai I, the Supreme Unity, who he declared was the ruler of the Five Celestial Emperors This deity resided in the North Pole Star, regarded by the Chinese as the fixed point in the heavens. The

*The order of the Five Elements given above is that which prevailed under the Han In later times it was changed, and became, Wood, Fire, Earth, Metal, Water.

Emperor instituted this cult, and a few years later T'ai I was elevated to an equal position with Heaven and Earth, the ancient supreme deities As usual the innovation was declared to be the revival of a forgotten practice held in honour by the sages of the distant past

A still more important development was the revival, or rather the invention, of two supreme sacrifices, the Fêng and the Shan, to Heaven and Earth respectively, which were to be the supreme ritual acts of the state cult, performed by the Emperor himself at the sacred mountain, T'ai Shan in Shantung, the highest peak in north China These sacrifices were to symbolise the divine support of the existing dynasty, and set the seal of heavenly approval on the acts and person of the Emperor. Unfortunately, although the sacrifices were said to have been performed by the great rulers of the golden age, all memory of the rites and ceremonies employed on these occasions had been lost. This, indeed, was easily explained. Only a sage could perform these sacrifices. An unworthy ruler could never ascend the sacred T'ai Shan Heaven would manifest its wrath, and violent storms would rage upon the mountain. Ch'in Shih Huang Ti had presumed to make the ascent, but a violent gale had arisen, forcing the tyrant to fly for shelter. The Emperor Wu was anxious to avoid such a disaster, which would have the very opposite effect to that for which he hoped.

Consequently the preparations for this sacrifice occupied a long time. The Confucian scholars, consulted upon the rites to be employed, hesitated and deliberated, but lacking authority founded upon an ancient text, they could formulate no plan. The Emperor, displeased by this attitude, turned away from them and consulted the magicians. They were not deterred by the lack of records. The ceremony to be employed, they suggested, was that formally used by the Chou kings in the sacrifice to Heaven made outside the capital. When this point was settled the Emperor still hesitated There can be no doubt that the Emperor Wu sincerely believed in the high spiritual import of these rites and feared that he was not worthy to perform them. He first made trial at other sacred, but less august peaks, which he ascended alone. The court having declared that celestial voices had been

heard on the mountain, the Emperor was encouraged to proceed, and in 110 B.C., accompanied by a great retinue, he reached T'ai Shan.

Even then, fearing the displeasure of Heaven, he first made the sacrifice at the foot of T'ai Shan. No signs of divine disapproval being manifest, and the weather auspicious, he next ascended the mountain accompanied only by Huo Shan, his charioteer, son of the famous general Huo Chu-P'ing Of what passed when the Emperor, alone upon the highest point in his domains, sacrificed to the mighty powers of Heaven, no record could be made. Huo Shan died suddenly and mysteriously very shortly after the Emperor had descended the mountain Ssŭ-ma Ch'ien, mentioning this fact without further comment, undoubtedly intends it to be understood that the Emperor had the sole witness of the supreme rite secretly poisoned

The sacrifice Shan was performed on a small eminence near the foot of T'ai Shan, and was not a secret rite The Emperor Wu revisited T'ai Shan in 106 B C when he once more ascended the mountain, this time quite alone. In 98 B.C he performed the sacrifices for the third time. On all these occasions the weather was fair and clear, the omens auspicious and Heaven's approval thus made manifest

While the imperial cult was being enriched by these additional sacrifices and deities, the popular religion of the Han period, which also received imperial patronage, was developing into a many-sided polytheism, a synthesis of all the local cults of the empire, now spread abroad and served by a numerous priesthood. The ancient gods of the soil and the crops, and the ancient worship of the ancestral spirits continued as ever high in the popular estimation, destined to outlive the strange cults from the coast country which were now in favour. These fundamental beliefs would seem to have continued their millenial existence unaffected by the tide of religious innovation which flowed so strongly in the Han period

Fig. 37, part of a scene from the bas-reliefs of the Wu tombs, shows a number of the divinities and spirits of the Han pantheon Nu Kua and Fu Hsi, the legendary rulers of the world in the highest antiquity, are shown holding in their hands the geometrical

FIG 37. *Bas-relief representing Fu Hsi and Nu Kua with attendant genii.*

instruments with which, as we may suppose, the land was delimited. Their snake-like tails are entwined. The winged figures and dragons whose bodies are partly formed of clouds are possibly spirits of the wind and rain.

Ssŭ-ma Ch'ien has accorded space in his history to these new creeds, and to the magician priests who ministered to them. He does not seem himself to have felt much faith in their potency, but he attests their popular appeal. The Precious One of Ch'ên, a god of Ch'in, had a great popular following. It would seem that the Precious One of Ch'ên was a pheasant god, which had originated in the worship of a meteorite. Ssŭ-ma Ch'ien describes the origin of this cult:

> "[In 747 B C.] the Duke Wên [of Ch'in] found on the north slope of Mt. Ch'ên Ts'ang [near Pao Chi Hsien, west Shensi] a being which resembled a stone. He sacrificed to it in that city. This god sometimes does not come during a whole year, sometimes several times in one year. When he comes it is always at night: he shines and sparkles like a shooting star, he arrives from the south-east and descends over the town where sacrifice is made to him. Then he resembles a male pheasant, his voice is powerful and the female pheasants answer him during the night. His name is the Precious One of Ch'ên "

Another deity, who received the patronage of the Court, was the Princess of the Spirits. Her origin was as follows:

> "The Princess of the Spirits was a woman of Ch'ang Ling who, after dying in childbirth, appeared as a divinity to her sister-in-law, Wan Jo. Wan Jo sacrificed to her in her house and the people came in crowds to sacrifice to her there. The Princess of P'ing Yüan* having come there to sacrifice, her descendants were covered with honours and glory [her descendants included the Emperor Wu] When the reigning Emperor came to power, he gave importance to this cult and made it one of the official sacrifices. One could hear the divinity speak, but one could not see her person."

*The Princess of P'ing Yuan was the maternal grandmother of the Emperor Wu himself. Hence the favour which this cult enjoyed at Court.

From another passage it is clear that this cult included Shamanism, for the Princess of the Spirits entered the body of a sorceress and answered questions put to her.

The magicians of the coast country, the coast of Shantung province, were the chief priests of these new gods, and rose to great honour at the Court. It is clear that this region was the home of many cults, which hitherto had not been practised in the western provinces The worship of the eight principal gods of this country was transplanted to the capital and flourished exceedingly These gods were the Masters of Earth, War, the Yin, the Yang, the Moon, the Sun, Heaven, and of the Four Seasons Although it would appear that their attributes and functions overlapped those of deities already established and honoured in the other provinces of China, the Eight Masters were installed in Ch'ang An and accorded temples and sacrifices. The people of Han times were not discriminating in their allegiance to the gods.*

Among the beliefs of this sect were the legends relating to the mysterious isles of the eastern sea. These three islands, P'êng Lai, Fang Chang, and Ying Chou, were situated not far from the mainland, and anciently had been visited by men Now, whenever a ship approached them, just as the islands appeared like clouds on the horizon, violent winds arose, and the ship was driven away In these islands lived the Happy Immortals, who possessed the secret of eternal life, and the means of making gold There every living thing, animal or vegetable was white The temples, palaces and towns were made of gold and silver

The legend of the mysterious isles obtained a strong hold on the minds of the emperors of that time. Ch'in Shih Huang Ti made several attempts to send emissaries to them, who might obtain the secret of immortality and the receipt for making gold, but he failed in his purpose He sent a magician with a band of young boys and girls, who were supposed to be more welcome to the Happy Immortals than other envoys The magician and his young companions never returned It has been suggested that the

*T'ien Chu, the Master of Heaven, bears the same title in Chinese as that adopted by the Roman Catholic missionaries for the Christian God. The unfortunate fact that this title had been that of a very minor deity of the Shantung coast, escaped the attention of the early missionaries

emissary made off with his ships to some part of Japan or the Liu Chiu islands and there founded a colony However that may be, the fascination of this legend continued to inspire similar expeditions.

The Emperor Wu placed great confidence in the magicians who promised to obtain for him the secret of immortal life. The first of a long succession was Li Shao-chun who enjoyed great favour until his death He had not only claimed to know the secret of immortality, but to be an immortal himself. In proof of this he had recounted to an aged scholar at the Court details of past events and happenings in the old man's boyhood, which had only been known to persons long since dead. He claimed to be able to make gold from cinnabar powder, and to have visited the magical island of P'êng Lai When he died, Ssŭ-ma Ch'ien maliciously says that the Emperor would not believe it, but thought Li Shao-chun had disappeared on some mystic errand in the guise of a spirit.

Li Shao-chun was succeeded by Shao Wang, also a man of Ch'i (Shantung), who gained the monarch's favour by evoking the shade of one of the imperial concubines who had been much beloved by the Emperor and had recently died The phantom appeared at night, when the Emperor, hidden behind a curtain, was able to see his beloved in the further recesses of the hall. For these arts Shao Wang received honours and titles, but his influence was of short duration. After a year he was detected in an attempt to deceive the Emperor by passing off an inscription which he had written on a piece of silk as the work of a divinity. He was then secretly put to death

In 113 B C the Emperor conferred his favour upon the most famous and enterprising of all these magicians, Luan Ta He was a eunuch, formerly in the service of one of the Han feudal princes, and had studied magic in the same school as Shao Wang Luan Ta was an eloquent speaker and did not hesitate to make extravagant claims He declared that he had often visited the mysterious isles of the eastern sea, but that as he was only a subject, the Immortals had despised him and would not give him their secrets. He therefore insinuated that if the Emperor wished to obtain this precious knowledge it would be necessary to send as

his emissary a man of high position The Emperor followed this advice, and as Luan Ta himself was the only man who seemed likely to be successful, he was given high official posts, the title of marquis with a territory of 2,000 households for his support, a palace, and 1,000 slaves Still more remarkable, this eunuch of base extraction was given as a bride the Emperor's own eldest daughter, with a dowry of 10,000 pounds of gold

The amazing fortune of Luan Ta is a most significant indication of the faith which was placed in these magical cults Luan Ta was no longer treated as a subject or as a eunuch, so that when he arrived in the mysterious isles the Immortals would treat him with respect and reveal their secrets to him. He was the messenger who should bring the Emperor into relation with the gods, and to signify this duty he was given a seal with the title of General of the Heavenly Way After enjoying these immense favours and a prestige, which, as Ssŭ-ma Ch'ien says, made the whole empire tremble, the magician set forth to embark for the mysterious isles. When he reached the seashore, however, he did not dare to embark, but instead sacrificed on T'ai Shan, declaring that he had met the Immortals at this place. The Emperor, who seems to have had certain doubts, had secretly sent spies to observe his proceedings When he learned from these men that Luan Ta had not embarked, and, moreover, that they had seen nothing of the alleged appearance of the Immortals, he caused Luan Ta and his followers to be put to death

Perhaps warned by these unfortunate examples, the next magician to the Court made more modest claims. Kung-sun Ch'ing, who, to judge by his aristocratic surname (Grandson of the duke), must have been a man of better family than his predecessors, urged the Emperor to make the Fêng sacrifice on T'ai Shan as an essential preliminary to obtaining the secret of immortality. He also represented that this consummation could only be achieved after a long life devoted to the study of the magical arts. Huang Ti, the legendary Emperor of the golden age, who had attained immortality and ascended to heaven on a dragon, had spent a hundred years in study of the arts of pleasing the spirits before he achieved his purpose. The Emperor, therefore, must not be impatient The spirits, said Kung-sun Ch'ing, did not seek

out the Emperor, it was the Emperor who had to learn how to approach them. Such was their nature that if pestered and importuned, they would refuse to hold communication with men. By these counsels of delay Kung-sun Ch'ing gained the entire confidence of the autocrat, and it was his advice and assistance which the Emperor followed in performing the Fêng and Shan sacrifices. In his later years the Emperor gradually tired of the vain search for the mysterious isles, but Kung-sun Ch'ing by his prudence avoided the fate of his predecessors.

The reign of the Emperor Wu and the revival of letters in the two Han periods left an enduring influence on the Chinese civilisation. In place of the mosaic of feudal states with their local traditions and cults, there was created a truly national culture, common to all parts of China. This culture arose as a consequence of the new political unity, but it proved stronger than the political system which had fostered it. The centralised empire fell, to be followed by long centuries of partition, but the cultural unity of China, created by the Han, survived every political catastrophe, and triumphed over the inroads of barbarian nomads. This has ever been the true unity of China, not founded on race or empire, but on the possession of a common script and the preservation of an ancient literature.

Chapter X

HAN ART

THE influence of the great revolution which substituted a centralised universal empire for the loose feudal federation of the Chou "Middle Kingdom" was naturally reflected in the art of the Han period. The ancient ritual conventions lost their force; in the stimulating atmosphere of a new society fresh forms of art were developed reflecting changed social and religious conditions, and deeply influenced by the wider horizons opened up by the enlarged and expanding empire. It was not only in the development of new artistic forms that the Han artist found himself freer than his predecessors, his services were now required by a wider circle of patrons and for a greater range of activity. Art ceased to be purely religious and the cultivation of art ceased to be the prerogative of kings and nobles.

The surviving Chou works of art come almost without exception from the tombs of feudal rulers; the best known examples of Han art, on the contrary, were made for families of minor importance. The bas-reliefs of Hsiao T'ang Shan and the Wu family in Shantung were the property of provincials far from the Court, and the beautiful lacquer objects recently discovered come from the necropolis of a distant frontier colony. The fact that these examples have survived does not prove that the best Han art was confined to Shantung or the frontier, on the contrary it suggests that the appreciation and use of beautiful works of art was very widespread, and that what has by chance survived in the provinces is only the pale reflection of the splendours of the Court at Ch'ang An and Lo Yang. Unfortunately, the sites of the Han capitals have never been scientifically excavated, and as these cities were frequently destroyed and rebuilt in later ages it is to be feared that archæology will never reveal more than scanty traces of the Han period.

Han graves are discovered from time to time in all parts of China, but with the exception of the necropolis of Lak Lang in Korea and certain garrison points in Central Asia, no purely Han site has yet been excavated. In Shantung there exist two well

preserved Han tombs, those of the Wu family (2nd century A.D) at Chia Hsiang Hsien in the south-west of the province, and those at Hsiao T'ang Shan near Fei Ch'êng Hsien, about thirty miles south of the provincial capital, which belong to the 1st century B.C It is from these two tombs, and from a number of other stones and memorial pillars scattered in different provinces that the characteristic Han art of bas-reliefs is known It is at least probable that the excavation of other Han tombs will yield further examples equally well, if not better preserved.

These bas-reliefs were engraved on slabs of stone built into the wall of a mortuary chamber, but the scenes depicted have nothing of a funerary character. The Han gentlemen who were interred here were not surrounded with bas-reliefs of a religious character depicting the after-life of the spirit, but with vivid and forceful representations of everyday life, historical events, or mythological scenes. The art of the bas-reliefs, though intended for the tomb, is concerned with terrestrial life. There are hunting scenes, battle pieces, notable historical happenings such as the attempt to assassinate First Emperor, Ch'in Shih Huang Ti, when he was still only King of Ch'in, and legends such as the visit of King Mu of the Chou dynasty to the divine ruler of the far west, Hsi Wang Mu, "Royal Mother of the West "* It was with these scenes of secular life that the Han Chinese of wealth and standing wished to surround themselves in death.

The secular character of the subjects of the bas-reliefs—a priceless gift to the historian who has so few sources from which to reconstruct the life of that age—raises an interesting question. The Han Chinese, like other peoples in every part of the world, furnished their tombs with cult objects designed to assist the spirit of the deceased in the next world Such were the clay figures

*The legend of Hsi Wang Mu has greatly intrigued western scholars. The early sinologists were tempted to believe that it confirmed their theory of a western origin of the Chinese people Later research has established the fact that the story is a legend or folk tale, perhaps a romance which has been enriched from century to century. It is now believed that the name Hsi Wang Mu, "Royal Mother of the West," should not be interpreted, but really represents a Chinese rendering of the name of a barbarian tribe settled in western Kansu in Chou times The question is fully discussed by Chavannes, *Memoirs Historiques de Se ma Ts'ien*, Vol. II.

which begin to appear in Han tombs, though this purely funerary art did not attain perfection until much later. The bas-reliefs cannot be forced into this category. The subjects chosen preclude such an idea There are indeed scenes of mythological character in which the multifarious gods of the Han pantheon are represented. Such scenes are not the most common and are not given a peculiar prominence. It is the secular scenes which predominate

These representations of historical events and everyday life can have had no religious meaning A bas-relief showing the meeting of Confucius and Lao Tzŭ outside Lo Yang (an apocryphal event) or Ch'in Shih Huang Ti trying to recover the lost bronze tripod from the river Ssŭ cannot have been intended to assist the deceased in his future life. A scene which shows the funeral procession of the deceased himself, or that of a battle against the Huns (Hsiung Nu), may perhaps have referred to the special interest which the ghost would take in matters of a personal nature, for one of the members of the Wu family had been lieutenant-governor of Tun Huang, a frontier city on the Kansu border.

Nevertheless, these bas-reliefs were intended solely for the dead, for they were placed with the carved surface facing inward, a position which made it impossible to see the carvings as long as the tomb remained undisturbed. The bas-reliefs were therefore intended for the pleasure of the dead man's ghost, not merely to commemorate his achievements. It seems reasonable to believe that the bas-reliefs were intended to recall to the deceased the scenes of glory or honour in which he had participated on earth, and also to provide examples of his favourite scenes from history or myth for his pleasure in the timeless ages of death. Were these scenes the particular choice of the deceased, executed for the first time for his tomb, or were they well-known pictures copied in stone to preserve them against time and decay? Such a question cannot be answered positively for lack of evidence. The sculptor of the Wu tomb bas-reliefs is mentioned by name in the inscription which records the building of the tomb

The inscription runs:

"In the 1st year of *Chien Ho* [A D 147] the cyclical year *ting hai*, in the third month which began with the day *kêng hsu* on

the fourth day *kuei ch'ou* the filial sons Wu Shih-kung and his younger brothers Sui-tsung, Ching-hsing and K'ai-ming, erected these pillars, made by the sculptor Li Ti-mao, styled Mêng-fu, at a cost of 150,000 pieces of money. Sun Tsung made the lions which cost 40,000 cash."

One of the lions has disappeared, but there seems no reason to doubt that Li Ti-mao was the sculptor of the bas-reliefs which lined the mortuary chamber as well as the maker of the pillars. The Wu family were of ancient lineage, claiming descent from the Shang royal line, who were also ancestors of the K'ung family to which Confucius belonged. The apparent bad taste of mentioning the cost of their father's tomb on the inscription was not therefore the vulgar solecism of an upstart family, but is perhaps typical of the Han age in which wealth counted for as much as noble descent Li Ti-mao must have been a man of distinction to deserve a mention in the inscription, and the price of the work shows that he was no local sculptor from the district city Probably he and his colleague, Sun Tsung, were well-known artists living at the capital. It is possible therefore that Li Ti-mao's work at the Wu tombs was original, specially commissioned by the "filial sons" or by the dead official himself prior to his decease. It is also possible that Li Ti-mao was either reproducing in stone works which had already been executed in some other medium, less suited to a memorial, or was a recognised artist who specialised in bas-reliefs for this purpose. Further excavation may bring to light other specimens of his work in some other district.

The bas-reliefs of Hsiao T'ang Shan, which are certainly earlier than those of the Wu tombs, are not dated, and we do not know the name of the family for whom they were made, or of the artist who made them Later inscriptions made by pilgrims or visitors show that the reliefs are older than the 2nd century A.D., and it is the opinion of Chinese scholars that they were made towards the end of the Early Han dynasty, in the 1st century B.C. These reliefs are lightly carved, in comparison with Li Ti-mao's work, but the delicacy of outline and grace of the workmanship are superior to the later series at the Wu tombs. It seems possible that the owner of this tomb had been a general, for one of the most

spirited scenes shows a battle between Chinese troops and the Huns (Hsiung Nu). The King of the Huns is seated before a tent, his identity indicated by a short inscription Mounted men gallop across the scene, the slain encumber the battlefield, and riderless horses show that some of these corpses are those of the cavaliers. On the right of the picture men are emerging from a group of conical objects which have been identified either as tents, or perhaps more probably as hills, for which this design is a convention.

Other reliefs show processions, one including a personage labelled the "Great King" (*Ta Wang*) who is riding in a chariot drawn by four horses abreast and accompanied by mounted men and other chariots The Great King cannot be the Emperor, for the imperial title is distinct. He may perhaps be one of the Han princes who were "kings" of the much reduced feudal states which still existed under the empire in strict subjection to the imperial Court. Like the scenes in the Wu reliefs, this procession may be an historical picture relating some episode of the Chou period Legends such as the visit of King Mu to Hsi Wang Mu are portrayed in these reliefs, for this subject seems to have been a very popular one in the Hanperiod The palace of the Hsi Wang Mu, no doubt showing the contemporary style of Chinese architecture, is a valuable piece of historical evidence, as no Han buildings survive. From the bas-reliefs it is clear that very little change has occurred in Chinese architectural styles in the 2,000 years that have passed since the Han period. See Chap. XXVI, Fig. 61.

The horses shown in these reliefs, and also in those of the Wu tombs are worthy of a special attention These proud high stepping steeds are not the ordinary Chinese, or rather Mongolian pony, but the marvellous horses bred in the west, in Ta Hsia and Ta Yüan, Bactria and Sogdiana. It was these horses which so greatly attracted the Emperor Wu that he undertook the amazing attempt to conquer these countries in order to obtain them. The Han were great lovers of horses, and jade heads such as the magnificent specimen in Plate V attest the popularity of this subject in works of art. Another feature, the trees with interlaced branches, sometimes two trees joined by one or more branches, may perhaps owe something to the Chinese contact

with Iranian art, but this design also had roots in Chinese legend. The joined trees, one of the objects of good omen, seems to have originated in the legend of two lovers who were separated in their lifetime, but were buried in contiguous graves After their death two trees sprouted from the graves, the branches intermingling and joining together. This legend of the joined trees was a popular subject in the Han period, typifying conjugal happiness and fidelity. Among the ancient Chinese motifs found in the bas-reliefs is the dragon, the rain spirit, here depicted in a form foreshadowing the familiar dragon of later Chinese art (Fig. 38).

An extremely vigorous scene on the Wu tomb bas-reliefs relates the famous attempt to assassinate Ch'in Shih Huang Ti, the future First Emperor, when he was as yet only King of Ch'in

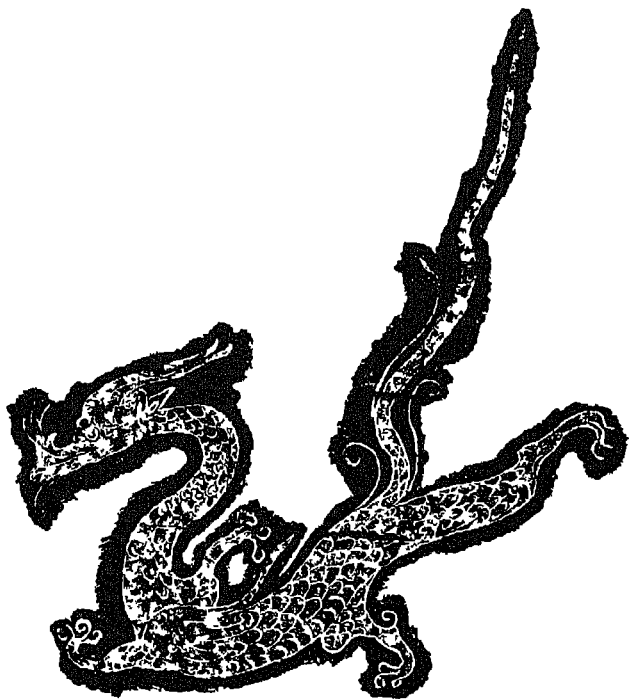



FIG. 38. *A Dragon. Han Dynasty bas-relief*

In 227 B.C. the Crown Prince of Yen, the state which occupied the north-east corner of the Middle Kingdom, corresponding to the modern province of Hopei (Chihli) and South Manchuria* determined to procure the death of the tyrant who had already enslaved the majority of the feudal states.

The King of Ch'in was so well guarded that no would-be assassin, without the most convincing credentials, could have any chance of approaching the monarch's person. The Crown Prince of Yen therefore devised a most ingenious if ruthless scheme. Yen had a general of great ability, the bulwark of the kingdom. The Crown Prince believed that if he could send an assassin who carried the head of this general as token of his enmity to Yen, he would be admitted to an audience with the King of Ch'in. The general consented to sacrifice his life, and the chosen assassin, one Ching K'o, carried his head to Ch'in, pretending to be a traitor to Yen, come to claim his reward at the hands of the rival Prince.

The ruse was successful, and the assassin was admitted to an audience. The scene which followed is vividly shown on the bas-relief reproduced as Fig. 39a Ching K'o, displaying the box containing the severed head, immediately attacks the King of Ch'in with a poisoned dagger. His thrust cuts off the King's sleeve, but the King, throwing himself behind a pillar, evades a second blow, while a courtier grapples with the assassin and calls for help. A confederate of the assassin lies on the ground, terrorised, and a soldier of the guard, armed with a sword and shield, is running up from the right. The dagger, with a silk tassel at the handle, has stuck through the wooden pillar, or perhaps has been thrown at the King. At the foot of the pillar is the box holding the severed head of the general of Yen, above which the King's sleeve cut from his gown by the blow, floats to the ground.

The panel above commemorates an episode of feudal history, the faithful charioteer of enormous strength, who, to protect his wounded lord, has wrenched off the canopy of the chariot and shelters the wounded man with it. The enemy noble, with a bow in his hand and two followers behind him, comes up in friendly courtesy to congratulate the charioteer on his courage and strength, an incident typifying the chivalry of feudal warfare.

*The capital of this state was on the site of the city of Peking.

FIG. 39. *Headpiece to bas-relief shown in fig. 39a.*

The lowest panel represents the two gods, Fu Hsi and Nu Kua, the founder deities of the Chinese world. They have entwined fishlike tails and are attended by winged spirits. Scenes of this character, strongly coloured by Taoist myth, are valuable evidence of the popularity of the cults which under the Emperor Wu enjoyed the full patronage of the Court. If evidence were needed to disprove the Confucian legend of the Han dynasty, which represents the literate class of that day as Confucian purists, despising and ignoring Taoist myth as "superstition," these tomb bas-reliefs, made for people of wealth and culture, amply fill the gap. The Emperor Wu was no exception among the cultured Chinese of his time. His trust in magicians and faith in the cults which flourished on the coast of Shantung was shared by the majority of his subjects. It is true that most of the bas-reliefs so far known come from Shantung and the region immediately to the south of that province, the area which according to Ssŭ-ma Ch'ien was the home of the exotic cults, and, consequently, these beliefs may well have been stronger in that district than in other parts of China.

The sudden appearance of the Han art of the bas-reliefs, which has no counterpart in earlier times, has naturally raised the question of foreign influence. There are obvious resemblances between the Chinese reliefs, and Persian or Assyrian work. The fact that the art arose in China at the very time when the Han Empire was making contact with the Greco-Bactrian

FIG. 39a. *Bas-relief from the Wu Tombs, Shantung. Han Dynasty*

kingdoms and with Parthia justifies the view that the Chinese were inspired by western models. Contact does not imply mere imitation; the subjects chosen by the Han artists were drawn from Chinese sources, and the style is characteristic of Chinese artistic traditions. Some motifs seem to have been either borrowed from or at least changed by Iranian models, but in general the Han artists continued to be inspired by traditional conventions, such as the cloud pattern, and by their observation of the actual life of their own time and country, as in the scenes showing banquets, hunts and processions It was the idea rather than the style which the Han Chinese acquired from the west A new medium for art, carving on stone, was suggested to them by their contacts with Parthia and the Hellenised east. They developed that idea in accordance with their own artistic tradition and the natural genius of a period rich in creative ability.

In another branch of art the Han now appear as pioneers. Up to recent years it was believed that porcelain was the discovery of a comparatively late age The Chinese themselves attributed the perfection of ceramic ware to the Sung period, and traced the beginning of porcelain manufacture no further back than the 6th or 7th centuries A D Discoveries made in Han tombs in the province of Shensi early in the present century show that in late Han times, the 2nd and 3rd centuries A.D , a glazed porcellaneous ware (proto-porcelain) was being made, though as yet in limited quantities Pieces of this ware, not to be confused with the well-known green glaze on countless Han vases, had been known to collectors in the 19th century, but were then supposed to be T'ang or even Sung work.

The late Han porcellaneous ware is not true porcelain, but it is technically the intermediate step between glazed pottery and porcelain proper The final perfection of the potters' art was not attained until several centuries later, and is recognised as the most characteristic and widely known achievement of the Chinese culture The initial stimulus, however, was a product of the contact with Iranian culture under the Han dynasty *

Side by side with new forms of art the Han carried on the traditional bronze working and jade carving, but their work was

*B. Laufer *Beginnings of Porcelain in China.* Chicago. 1917.

not a perpetuation of the classical style unchanged. A freer, less conventional and more catholic taste had arisen under the empire. Art was more secular, even when dedicated to religion, for the influence of foreign styles was pervading branches of art which in the feudal period had been governed by rigid conventions. Bronze as a metal was now slowly giving place to iron for purposes of general utility. It remained the chosen medium for sacrificial vessels and ceremonial weapons, and mirrors (Fig. 40), for which no doubt the new iron was regarded as ritually unsuitable

The intimate contact, both in war and peace, between the Han Empire and the Huns (Hsiung Nu) introduced a new type of ornamentation for metal work, the animal or Scythian style* This art probably originated in western Asia, whence it spread throughout the steppe regions of the Eurasian continent. The motifs most often found are those of animals in combat, or single animals represented in the act of bounding away. Very often the figures are confronted, and frequently elaborated into mixed forms, in which the limbs of one beast become the body and head of some totally different creature. The tiger, deer, ox and horse are the animals most frequently represented on the true Scythian pieces, but when the art reached China it was enriched by the addition of the mythical dragon and phœnix, and by elephant motifs which had been unknown to the northern people. When the artist has not been forced to subject his fancy to the restrictions of a conventional arrangement, the animal figures are executed with vigorous feeling and a keen sense of movement

Of Scythian art proper the most common objects are pieces of horse equipment and rectangular plaques which may have been worn as amulets (Fig. 41). These bronzes are found throughout northern Asia as well as in China itself. It is very probable that many of them were made in China, either for sale to the nomads in the north or for the use of Chinese cavaliers, for, in riding fashions and cavalry equipment the Chinese freely adopted the customs of their neighbours. The Han artists, however, employed the Scythian style of ornamentation not only in bronze and other metal work, but also in textiles.

*Also called Scytho-Sarmatian, Sarmatian, Siberian, Scytho-Siberian and Sino-Siberian.

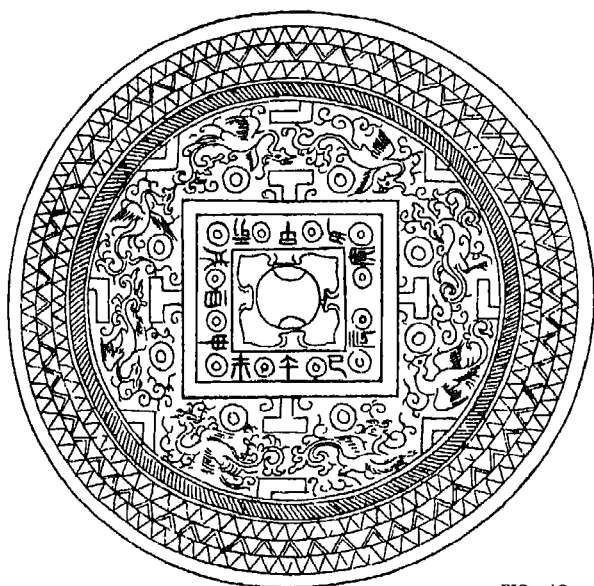



FIG 40 *Bronze Mirrors of the Han Dynasty*

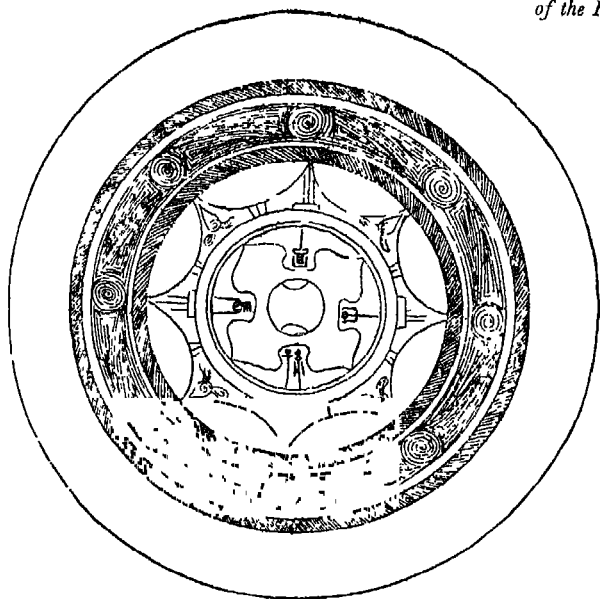
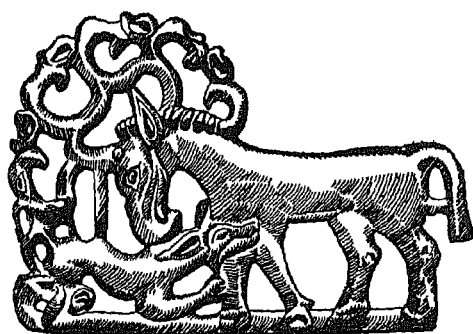



FIG 41. *Bronze Plaques with open work designs in Scythian Animal Style.*

The axe head illustrated in Plate VI, a very beautiful ceremonial weapon, is a magnificent example of the free choice of ornament open to the Han bronze worker under the influence of the Scythian style The confronted supporting figures between the haft and the blade, although rather lizard like, are wingless dragons. On the upper part of the blade between these dragons the head and wings of a bird with a curved beak are cut in low relief The end of the haft has the shape of an elephant's head with up-raised trunk, but the trunk itself is furnished with an eye which transforms the tip of the trunk into a bird's head. On the end of the haft itself this design of an elephant's head and trunk is repeated in low relief, while the head and front leg of another

animal, perhaps a tiger, rounds off the design on the lower side of the haft On the flange projecting above the haft a heart shaped design, with two prominent eyes, is perhaps a degeneration of the ancient cicada motif. Other motifs from the old tradition are the *lei wen* or meander in the band round the haft and the scroll cloud pattern where blade and haft join This specimen is a fine example of the blended animal forms of the Scythian style and Chinese geometrical patterns

Chinese historians do not usually devote much space to accounts of those arts which were not included in the pastimes of the scholar We hear of painting, caligraphy and poetry even when no specimen of the artist's work has survived the centuries On the other hand contemporary Han texts do not speak of the bas-reliefs or of the lacquer and textiles which we now know from archæological discoveries Ssŭ-ma Ch'ien in his all embracing work does indeed refer to the silk industry, but he does not give detailed information about the quality and designs which found favour with the wealthy classes of his time. From western classical sources it is known that the silk from China was a valued and extremely expensive import into the Roman Empire. This information, however important to the history of trade in the ancient world, made no contribution to the history of art Fortunately archæology has in some measure filled the gap. The discoveries of Sir Aurel Stein at Lou Lan* and Tun Huang in Chinese Turkestan and of the Kozlov Expedition in Mongolia have brought to light, from these widely separated sites, priceless examples of Han silks, in addition to a great number of other products of Han industry.

Sir Aurel Stein's discoveries were made in 1914 at Lou Lan, a deserted ruin in the Lop Nor region of Turkestan which had been a garrison point on the Han southern route across the desert to Kashgar and Parthia Towards the end of the Han period this southern route became impassable owing to the failure of the wells, and Lou Lan was abandoned The dry sands have preserved

*Lou Lan in Central Asia must not be confused with Lo Lang in Korea Both are sites of great importance for the art of the Han period. The latter is sometimes spelt Lak Lang in the Korean manner To avoid confusion this spelling is adopted here

materials which would have perished completely in any moister soil. The exact date of the Lou Lan finds would be difficult to ascertain if comparative data had not existed. Fortunately Sir Aurel Stein discovered in a ruined watch tower outside the frontier fortress of Tun Huang, in the extreme north-west of Kansu province, similar silk materials in conjunction with other finds which could be exactly dated as belonging to the 1st century B.C.

The discovery of rich silken garments and hangings in such remote and uncongenial places far from the civilised capitals of the Han Empire may seem surprising The explanation lies in the fact that silk was used to pay the troops in Han times. Ssŭ-ma Ch'ien relates that the Emperor Wu, when he inspected the garrisons in the north along the Great Wall, distributed more than a million pieces of silk as bounty. It is by no means impossible that some of the silks found in the ruined watch tower near Tun Huang had formed part of this imperial largesse. Whether these silks were part of the pay of the army, or part of a cargo destined for export to the west, they supply a valuable criterion for judging the quality and technical achievement of the Han silk industry. If these silk stuffs were judged suitable for the pay of soldiers and for trade to barbarians, it is reasonable to believe that those reserved for imperial use, or purchased by the wealthy official class at the capital, were very much superior

The finds at Lou Lan and Tun Huang are polychrome figured fabrics, showing refined and intricate patterns in which many motifs familiar from other branches of Han art appear. There are the dragon and phœnix, animal style ornamentation with confronted beasts and birds, equestrian figures, strongly reminiscent of those shown on the bas-reliefs, as well as geometrical designs which seem to have influenced the decorative motifs of textile art in the Byzantine Empire and Iran

The work of the Kozlov Expedition sponsored by the Russian Academy of Sciences has provided fresh evidence of the high quality of Han silks, and the value which was attached to them by barbarian peoples The expedition excavated the tombs of Hsiung Nu (Hun) chieftains in the valley of the Selenga River which drains northern Outer Mongolia and flows into Lake

Baikal The evidence of the finds themselves suggests that these chieftains were contemporaries of the Han dynasty, and like the nomads of later periods, catholic collectors of luxuries from every civilised race with whom they were in contact. Han silks are found with textiles of Iranian workmanship in which Hellenistic art motifs are strong. Some of the embroidered hangings have a purely Greek design, and if not the product of some Black Sea or Asiatic Greek city, are directly copied from Greek work. The Selenga tombs therefore afford a direct proof of one important channel of diffusion between the Hellenised east and the Han Empire.

The tombs contained other products of Chinese industry as well as silk fabrics It is possible that these are choice specimens of the booty made on some frontier raid, or perhaps part of the gifts bestowed by a Chinese embassy. The Han historians frequently mention such gifts, which at times amounted to a form of "Danegelt" paid to keep the restless nomads content and peaceful. Among the Chinese objects found in these tombs is a lacquer bowl, which, if the attribution of the tombs to the Han period is correct, confirms the recent discovery of Han lacquer—hitherto unknown—at a site in Korea.

Until the Japanese authorities in Korea undertook the scientific excavation of the necropolis of Lak Lang, a site close to the modern city of P'ing Yang (Japanese Heijo) in northern Korea, the existence of Han lacquer ware was unknown It was generally believed that lacquer was the invention of a much later period. The Lak Lang finds therefore have a special importance for the history of Chinese art. Not only have they revealed the existence of lacquer at an early period, but as the site is purely Han, and many of the objects recovered are inscribed and dated, it is possible to use the Lak Lang discoveries as a standard by which to judge other finds or objects of which the provenance and date is unknown.

Lak Lang was a military colony founded by the Emperor Wu in 108 B C. It remained the centre of Chinese authority in Korea until the period of nomad invasions following the fall of the Han dynasty, when the Chinese colony was absorbed by a rising native Korean kingdom Although only a remote frontier colony it is

evident that the Chinese officials of Lak Lang surrounded themselves with the products of Chinese art and industry imported from distant parts of the Han Empire. Here, as in the case of the textiles found in Turkestan, the degree of luxury enjoyed by the Chinese rulers of this remote colony offers a suggestive indication of the standards prevailing at the capital. Lak Lang no doubt imitated the fashions of the Court and the governor's mansion was furnished in modest imitation of the imperial palace.

Over two hundred pieces of lacquer ware—many polychrome—in various states of preservation, have been recovered from the Lak Lang tombs. Many are inscribed and bear dates covering the period between 85 B C. and A D. 52 The inscriptions show that these pieces were made in China, in the western part of Szechuan province, not far from the city of Chêng Tu (Fig 42)

FIG. 42. *Lacquer Bowl from Lak Lang, Korea. Han Dynasty*

Jewellery, such as the gold belt buckle illustrated in Plate VIIa, has also been found in the Lak Lang graves This beautiful piece was recovered from a grave of the 1st century A D As it was found inside the wooden coffin it probably served as a fastening on the funeral clothes. The work is set with stone inlay, at first sight suggesting beads, which emphasise the lines of the intricate pattern of entwined dragons. It is rather remarkable that a personal ornament with this pattern should be found in the tomb of a provincial official In later times the dragon is an imperial emblem, which a subject could not use The custom apparently was not so rigid in the Han period, although it is always possible that this gem had been an imperial gift which the possessor took with him into the tomb.

PART THREE—THE AGE OF CONFUSION

Chapter XI

THE FALL OF THE EARLY EMPIRE

THE period of exactly four hundred years which divides the collapse of the first strong centralised empire, the Han, from the restoration of unity at the foundation of the Sui dynasty, is the age which in China most nearly approaches the character of the "Dark Ages" of European history. The causes were alike The collapse of the world empire of the Han was followed, as in the west after the fall of Rome, by barbarian invasions, which, though less destructive in China, overthrew the centralised state and checked the cultural development of the eastern world. In China the consequences of the collapse and the barbarian invasions were by no means so serious as in the west. The memory of the past was never lost. The language and literature of the Han dynasty continued to be spoken and read, the continuity of Chinese civilisation was not irremediably impaired In the southern empire, which escaped the Tartars, the traditions and culture of the Han period were kept alive, while even in the north, the Chinese proved too virile to be transformed by the Tartar conquest; on the contrary, they absorbed their conquerors and assimilated them into the body of the Chinese nation

Nevertheless, the Tartar conquests and the wars and troubles which preceded it spread havoc. The ancient centres of Chinese civilisation were ruined and left desolate. The vast imperial library of Lo Yang was destroyed, and with it perished many ancient books which had survived the Ch'in proscription Great numbers of people fled before the invaders to take refuge beyond the Yangtze, and their place was filled in some measure by an alien stock. This migration had a lasting effect. Up to the end of the Han dynasty the northern plain and plateaux of the north-west had been the hub of Chinese civilisation; the lands of the Yangtze valley and further south were colonial territories, inferior in culture and sparsely populated After the Tartar invasions the centre of gravity moved south. The Yangtze valley was fully and finally incorporated into the true Chinese area, and henceforward contributes largely to the cultural life of the nation. To Ssŭ-ma

Ch'ien the modern provinces of Chekiang and Kiangsu were still strange, semi-barbarous lands, but in the T'ang dynasty, when the empire was once more united, these countries, which had been the heart of the southern empire during the partition, were as Chinese, and as cultivated, as the provinces of the Court.

The fall of the Han dynasty was the consequence of the inveterate evil which had manifested itself from the beginning of the centralised empire, the inordinate power of irresponsible elements near the throne. The Early Han had been brought to ruin by the ambitions of the consort families, ending in the usurpation of Wang Mang. When the Han were restored, the evil was in some measure abated, few of the consort families in the Later Han attempted usurpation, though several were degraded or exterminated on charges of planning treason. The restored Han line was thus able to govern in comparative peace and stability for over a century, a great period which saw not only the conquests and discoveries of Pan Chao but the literary activities of his family and their contemporaries.

It was not until the reign of Han Shun Ti (A.D. 126-144) that a new weakness in the government made headway, destined in time to bring the empire to ruin. The power of the palace eunuchs, which first became a serious political factor in this reign, was in part a consequence of the ambitions of the consort families, in part due to the secluded manner of life which court etiquette prescribed for the Emperor. He rarely left his palace, or the vast gardens attached to it. The ministers of state only saw their sovereign at formal audiences, where a rigid etiquette governed the proceedings. When he travelled the roads were guarded and cleared of the populace, who might not even gaze upon the monarch. It was never true in China that a "cat may look at a King."*

On the other hand the ladies of the palace, and the eunuchs who attended upon them, and who were the only males allowed to

*The term of address to the Emperor in Chinese, "Chieh Hsia," literally meaning "below the steps," well illustrates the aloof majesty of the occupant of the throne The ministers at the audience might not directly address the sovereign to offer their advice or opinion They addressed their words to the officials nearer the high raised throne, those who were "below the steps," by whom they were transmitted to the Emperor Thus "Chieh Hsia" became the Chinese synonym for "Your Majesty "

reside in its precincts, were of necessity in constant and intimate association with the Emperor. They alone had ample opportunities for discovering the weaknesses of his character, playing upon his prejudices, and gratifying his whims. They alone were the channel by which he learned of events beyond the palace walls. The ministers might offer memorials, or write reports, but it was from the eunuchs that the Emperor heard the gossip of the outer world, and he heard only what they chose to tell him.

In the early reigns, when the sovereigns themselves had been bred outside the palace and only came to the throne as mature and middle-aged men, these influences were unimportant. When the heir to the throne, as was often the case in the 2nd century A.D., was a boy born and bred in the palace, under the care and in the company of eunuchs from his childhood, the Emperor became the plaything of these servitors, who knew his foibles, coloured all he ever learned of the outer world, and prejudiced him against those ministers who attempted to oppose their influence.

Han Shun Ti was the first to gratify his eunuch favourites with titles and official rank, but, though their power and their unpopularity with the mass of the people grew rapidly in his reign, it was offset by the great authority of the consort family of the Liang, brothers of the Empress, a family which dominated the government for twenty years, and which had numbered among its members seven princes, three empresses, six imperial concubines, and three grand generals of the forces. Three princesses had been given in marriage to this family, and no less than fifty-seven members of it had been employed as ministers of state and governors of provinces. None the less the triumph of the eunuchs was the direct consequence of the over-weening power of this family which threatened to usurp the throne itself.

Han Huan Ti (A.D. 146-167) used the eunuchs as a counterweight in the political struggle against the Liang family, who had poisoned his predecessor, though a mere child, believing him to be opposed to their pretensions. In A.D. 159 the Empress died, and the young Emperor relying on his eunuch supporters, who detested the Liang clan, carried out a palace revolution and exterminated the would-be usurpers. Once the Liang were

destroyed, the Emperor, who considered that the eunuchs had proved his best friends against these formidable enemies, relied upon them in all things Before long their power was greater than that of the consort families had even been, and it was wielded far less wisely The single aim of eunuch policy was personal enrichment They were recruited from the lowest strata of society, and, in consequence, they lost no opportunity of laying hands on such wealth as came their way.

Established in the centre of the governmental machine they soon obtained complete control of the civil service which they filled with their relatives and creatures. Promotions and appointments depended on eunuch goodwill, and their favour was only to be purchased with gold. Honours, rewards, titles and power were bestowed upon those whom the eunuchs praised to the Emperor, while imprisonment and the torture chamber were the fate of the upright officials who attempted to stem the tide of corruption or enlighten the Emperor as to the true state of affairs. The provincial officials, forced to purchase their appointments by heavy payments to the eunuchs, and only retaining them as long as they made further costly presents, recouped themselves by misappropriating the revenue and exploiting the populace Popular risings occurred, and were put down with severity, without the cloistered Emperor ever learning their extent or their cause

Throughout the twenty-one years of Han Huan Ti's reign, the evil grew by leaps and bounds, but the new power of the eunuchs was not unopposed. The scholar class, who since the reign of the Emperor Wu had come to consider the civil service as their own, and scholarly learning as the only and proper qualification for official rank, were offended and outraged to find official posts distributed by eunuch favour or bought for money paid to the same quarter. Many of the scholarly families were far from rich, and these were now denied any chance of preferment, no matter what their merit. The generals, who found incompetents promoted by reason of payments made to the eunuchs and deserving officers degraded for their inability or unwillingness to do the same, were estranged and their loyalty cooled.

Among these two classes a powerful opposition to the eunuchs developed, but the lack of contact between the scholars and the

military prevented any combined effort to purge the Court. The scholars in A.D. 166 founded an association which, while ostensibly a college devoted to the spread of Confucian doctrine, soon became an instrument of open opposition to eunuch power. The popular feeling was on the side of the scholars, not only because the Chinese have always felt a profound respect for education and scholarship, but also because the poor suffered from eunuch exactions as much as the official class. With the backing of the people the scholars and the officials who were not in eunuch favour obtained some success.

At the death of Han Huan Ti (A.D. 167) the association had secured the conviction of several of the more notorious eunuchs and their creatures in the provincial administration. Had the new Emperor Han Ling Ti given his support to the scholars the power of the eunuchs could easily have been checked, for it rested solely on the confidence of the Emperor himself. Unfortunately Han Ling Ti came to the throne at the age of twelve. The Empress Regent at first supported the scholars, and entrusted the administration to members of the association. The child sovereign, however, was from the first under the influence of the eunuchs who wasted no opportunity in an assiduous attempt to prejudice his mind against the scholars and their association, which they represented as a treasonable body.

Having established a dominating influence over the boy Emperor, the eunuchs lost no time in striking a death blow at their enemies. In the first year of the new Emperor's reign, A.D. 168, they brought about a palace revolution, imprisoned the Empress Regent, and, having represented the association of the scholars to the Emperor as a body aiming at his deposition, easily persuaded him to sign decrees by which all the leading officials and members of the association were arrested, condemned, and executed. The association was proscribed, its followers and subordinate members persecuted or imprisoned, and the administration cleared of all who had supported it.

The Emperor, learning nothing of these events except in the form in which the eunuchs represented them, was convinced that a dangerous sedition had been suppressed by his faithful eunuchs, and from that day they exercised supreme power, having

merely to accuse any critic of supporting the association, to obtain his death sentence. The consequences of this intrigue were fatal to the empire. The eunuchs themselves, who were not allowed to leave the palace in the ordinary course of events, were ignorant of the disorder which their rapacity caused in the provinces The administration was filled with their clients who took care not to criticise the policy of their masters. The peasantry, exploited and despairing, was ready to follow any leader who offered to alleviate their distress

For some years the central provinces had been swept by an epidemic for which a certain Chang Chüeh, an itinerant magician, discovered a remedy. Whether Chang Chüeh had some medical skill or whether the pestilence was of a character susceptible to faith healing, the magical cure, which consisted in drinking pure water over which a formula had been pronounced, had a marvellous success Soon the provinces were filled with devoted adherents of Chang Chüeh, who believed that they owed their lives to his art. Finding himself at the head of a numerous band of disciples, and with great popular support, Chang Chueh determined to exploit his success by taking up arms against the unpopular and tyrannical administration of the eunuchs (A.D. 184)

Thus began the famous rebellion of the Yellow Turbans, so called from the distinguishing headdress which the followers of Chang Chueh adopted. This rebellion, the direct cause of the fall of the Han dynasty, is the prototype of all the mystical secret society popular movements which have arisen as protests against misrule in subsequent periods Many of the later movements, if not all, actually claimed to have inherited the secret instructions of the founder of the Yellow Turbans, who promised immortality to his followers on the battlefield after they had partaken of magical medicaments.*

To suppress the rebellion of the Yellow Turbans the Han Court

*This is a doctrine common to all these movements It was held by the Boxers (Society of the Harmonious Fist) in 1900 and is held at the present time by the Heavenly Gates and Red Spears, who are locally known as "hard stomachs" as they claim that a bullet cannot penetrate their skin Repeated disproof fails to shake the faith in this superstition, which is stimulated by carefully staged demonstrations.

was obliged to call into being large armies; the support of these forces drained the treasury, and the corruption of the eunuchs, who interfered with military operations and even took bribes from the rebels, prevented any effective action In consequence the able officers were disgusted with the policy of the court, and developed a keen animosity towards the eunuchs When Han Ling Ti died in A.D 189, leaving no direct heir, there ensued a fierce political struggle between the army and the eunuchs. The power of the scholars had been shattered by the proscription of the association; consequently, when the new war trained army came into collision with the Court, controlled by the eunuchs, there was no mediating body to stave off disaster

The eunuchs openly opposed the Prince who had the support of the commander-in-chief, Ho Tsin, brother of the Empress. To carry his policy, if necessary by force, Ho Tsin obtained an order from the Regent, his sister, ordering the elite of the troops to gather at the capital. He expected to overawe all opposition by this display of force. Many of the generals, reverting to the policy which the scholars had advocated, urged the general to exterminate the eunuchs to the last man The Empress, however, was unwilling to give in to this plan, and her brother deferred to her wishes The result was fatal to him

Believing that with his troops in the city the eunuchs would not dare to touch him, he advised them to withdraw into private life, before other generals, less willing to spare them, arrived at the capital The eunuchs, who perhaps failed to understand the force of the opposition and the hatred they inspired, unwisely attempted to intimidate the army by striking at its leader. Ho Tsin was summoned to the palace on a false order, and assassinated in the great court as soon as he appeared The eunuchs then displayed his head at the gate to overawe his lieutenants. The consequences were exactly the opposite. Led by their commanders the troops forced the palace gates and massacred every eunuch they encountered In the confusion the Emperor was abducted and fell into the hands of an army commander of notorious brutality.

From that day the Han Empire dissolved into anarchy, the capital and palace were sacked and destroyed, and the Emperor

became a pawn to be captured or stolen by the rival military freebooters between whom the empire was divided. The dynasty nominally endured until A.D 221, the year in which the last Han sovereign, who had been many years the puppet of the celebrated general Ts'ao Ts'ao, was compelled to abdicate his throne in favour of Ts'ao Ts'ao's son (Ts'ao P'i). This anarchic age is known as the period of the Three Kingdoms (San Kuo) from the kingdoms of Wei, founded by Ts'ao Ts'ao in the north, Wu founded by the Sun family in the east, with its capital at Nanking, and the Shu Han* founded by Liu Pei, a distant scion of the Han family, who reigned at Chêng Tu in Szechuan (Map 6.)

MAP 6. *The Three Kingdoms (San Kuo).*

In China this age has a curious fame, resting upon the fact that it has become celebrated in literature by the famous cycle of stories, half history, half legend, known as the *San Kuo chih yen i*,

*So called because it was established in Shu or Szechuan province.

which, though in its present form does not antedate the Ming dynasty, is based on stories far older.* Owing to the popularity of this novel and the many plays drawn from it, the San Kuo period, in reality an age of bloodshed and turmoil, has become idealised to the Chinese as the golden age of chivalry and romance, better known to the mass of the people than any other epoch in their long history. There are few Chinese who do not know Ts'ao Ts'ao's celebrated epigram, when justifying himself for murdering his host under a misapprehension, "I would rather betray the whole world than let the world betray me." Kuan Yü, one of the generals of this period is now canonised as Kuan Ti, god of war, one of the most popular deities with the common people, because he is not a Mars, but the god who prevents war. Fig. 43, showing a popular representation of Kuan Ti, mounted and armed with a long halberd, is reproduced from a stone tablet in the Confucian temple at Sianfu.

When the San Kuo period is stripped of the thick growth of romantic tales which cluster round its leading figures, it appears as a deplorable epoch of treachery and violence In A D 220 Ts'ao Ts'ao's son, Ts'ao P'i, dethroned his nominal sovereign, the Emperor Han Hsien Ti, and terminated the last semblance of the Han Empire. To accomplish this purpose a ceremony was invented which henceforward passed into the constitutional practice of China. Up to this time there had been no instance of a peaceful transmission of the imperial authority to a new family. The Ch'in had been exterminated before the Han were recognised as Emperors, the Chou Kings had been deprived of their last possessions by force. Wang Mang who usurped the throne of the last Emperor of the Early Han line, had simply appropriated the seal of his infant sovereign and forced the Court to recognise him as Emperor. He had been stigmatised as a usurper, and his reign was not admitted as legitimate. Ts'ao P'i first obtained from the Court a petition asking him to ascend the throne This he rejected, and refused all such offers until the Han Emperor, who realised what was required of him, had three times offered in writing to resign the throne, and sent the seal to Ts'ao P'i. On the fourth

*It has been translated into English, under the title *San Kuo, or Romance of the Three Kingdoms* C. H. Brewitt-Taylor, Shanghai 1925.

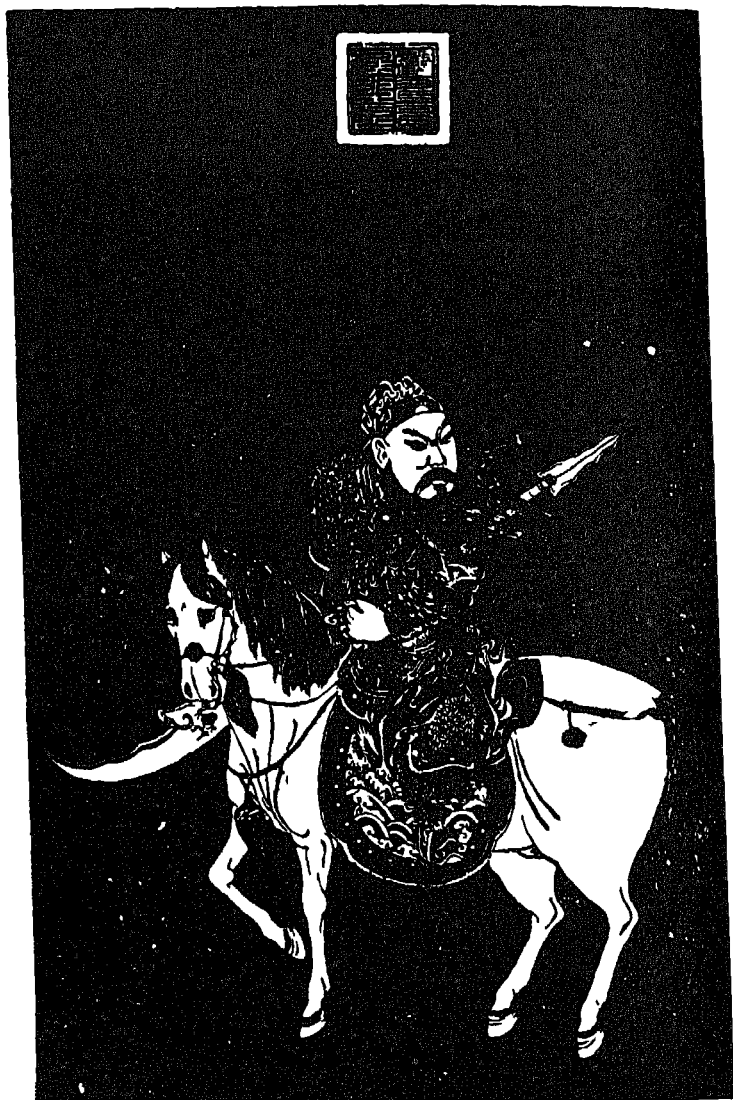



FIG. 43. *Kuan Ti, from a stele in the Pei Lin, Sianfu, Shensi.*

occasion the all-powerful minister yielded to these urgent requests. The renunciation of the throne was made the occasion for a public ceremony in order to emphasise its legitimacy. A huge stage was erected outside the palace, and having ascended this, in the sight of the assembled court, Ts'ao P'i received the seal of the empire from Han Hsien Ti, and then mounted the imperial throne. The new Emperor's first act was to make sacrifice to Heaven in order to obtain the divine approval. The deposed Emperor was granted an appropriate title, and Ts'ao P'i took into his harem both Hsien Ti's daughters, in imitation of Yao, who was said to have married both the daughters of Shun.

The new dynasty, known as the Wei, did not last long, nor did it ever govern more than the northern provinces. The sovereigns of the southern states, the Princes of Wu and of Shu Han assumed the imperial style also, and later historians have considered that the rulers of the latter state, as members of the Han imperial clan, were the legitimate emperors, although their territory was smaller than that of their rivals. In A D 265 Ssŭ-ma Yen, grand general of Wei, member of a family which had long monopolised the military authority in the northern state, treated Ts'ao P'i's descendant as that usurper had the last Han, and usurped his throne with due formality, based on the earlier ceremony. The new dynasty, the Tsin, reunited the whole empire for a brief spell by the conquest of Wu in A.D. 280, but the Ssŭ-ma family, a collateral branch of the same ancient clan to which the historian Ssŭ-ma Ch'ien had belonged, proved quite incapable of organising their conquest on a lasting basis.

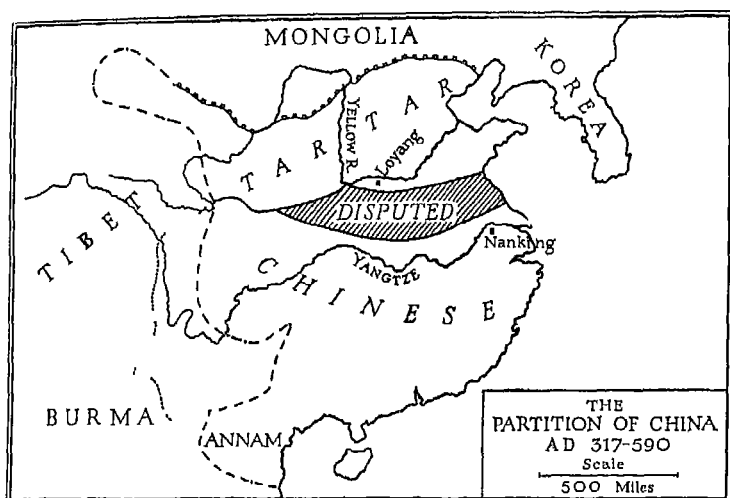
The founder, Ssŭ-ma Yen, posthumously known as Tsin Wu Ti, had no less than twenty-five sons, and he made the fatal error of dividing up his dominions into numerous principalities among them His successor was a weakling without the necessary character to control his brothers Civil wars broke out between the princes, the government was soon reduced to anarchy. In A.D. 304 one of the princes made the mistake of calling in the Hsiung Nu tribes to his assistance. At about the same time one of his rivals invoked the help of the Hsien Pei, another nomad tribe of Turki stock.

Just as the Goths, first enlisted as Roman auxiliaries, ended by

seizing the empire for themselves, so the Hsiung Nu chief, who claimed descent on his mother's side from a Han princess, did not hesitate to make war for his own advantage. The empire, distracted by the jealousies of the Tsin princes, made no effective resistance to the invaders. In A.D 311, the Hsiung Nu, who had already founded in Shansi a kingdom which they called Han in honour of their chief's descent, captured Lo Yang and made the Tsin Emperor a prisoner. In A D 316 they captured his successor who had taken refuge in Ch'ang An, and from this date the whole of north China, everything north of the Yangtze watershed, was lost to the Tsin.

Although the first leader of the Hsiung Nu, Liu Yüan, had adopted a Chinese name, and was even well versed in Chinese literature, his followers were barbarians, and their progress was marked by destruction and slaughter. Lo Yang was sacked and burned, and in this catastrophe perished the imperial library of the Han dynasty The condition of Ch'ang An, once the capital of the empire, when it had already been once sacked by the invaders is thus described:

> "At this time in the city of Ch'ang An there were not more than one hundred families. Weeds and thorns grew thickly as if in a forest. Only four carts could be found in the city The officials had neither robes of ceremony nor seals. Instead they used tablets of mulberry wood on which their names and rank were inscribed."

In A D. 316, following the definite collapse of all resistance in the north, the Tsin Court fled to Nanking, where a new Emperor was set up This city, which had been the capital of the Wu state, was already the chief centre of the southern provinces. It now afforded a safe refuge for the fallen Tsin Emperors, who reigned there over the southern provinces in comparative peace until A D 420. Meanwhile the north was delivered over to several competing nomad kings and their tribes (Map 7) This anarchy saved the south from a like fate. No ruler in the north was sufficiently secure to risk an invasion of the Yangtze valley, which in any case is a country highly unsuitable to cavalry, upon which arm the Hsiung Nu and other Tartar tribes principally relied A determined

MAP 7. *The Partition of China.*

attempt to invade the southern empire was indeed made in A.D 387, but was disastrously repulsed in a decisive battle.

The consequences of this battle (Fei Shui) were twofold, the south was saved, and the northern kingdoms, weakened by the disaster, succumbed to a new nomad invasion by the Wei, or Toba tribes, who conquered the whole north and founded a dynasty which endured from A D. 386 to 557. The Wei were of Tungusic stock, and proved better rulers and organisers than the Hsiung Nu and Hsien Pei tribesfolk They rapidly assimilated Chinese civilisation and intermarried with the natives of the soil In A D. 500 the Wei Emperor actually issued a decree prohibiting the use of the Tartar language, costume and customs in favour of those of China The Wei dynasty was thus completely identified with the Chinese culture, and did much to preserve and restore the literature of the Han era

The ease with which these invading nomads, who entered as untamed barbarians, were assimilated into the Chinese civilisation argues strongly against the supposition that the invading tribes were very numerous Ancient statistics are not reliable, but the traditional figure of 50,000 for the fighting force of the first

invasion, which if multiplied by four would give 200,000 for the whole strength of the tribe, is probably not very far from the truth. When the Wei Emperor issued his decree against Tartar customs, the region of Honan, in which province the Wei held their Court, is said to have had a Tartar population of only 14,700, and even if this be taken to refer to families, it still indicates that the invaders were but a handful.

By the end of the period of partition, A D. 589, the two races had intermarried to such an extent that few families of pure Tartar blood could be found, and all had acquired Chinese language and culture. Similarly the modern Manchus long ago lost all use of their own language and adopted Chinese customs and manners in almost every particular, in spite of the fact that up till the fall of the late dynasty in 1911 they were forbidden by law to intermarry with the Chinese. The 4th and 5th century invaders, who were certainly not more numerous than the Manchus, never enforced a prohibition against intermarriage with the Chinese, and as has been said, actively encouraged the adoption of Chinese culture and customs. By the 6th century they must have been even more completely absorbed than the Manchus of to-day.

The southern empire, in spite of long periods of border warfare and tiresome sieges of walled cities, in the defence of which the Chinese excelled, was never really menaced with destruction after the battle of Fei Shui. Although the Tsin dynasty fell in A.D. 420, to be succeeded at short intervals by four minor dynasties, these internal troubles did not open a road to northern conquerors. Under the Liang dynasty, which endured from A.D. 502 to 557, the Court of Nanking was a centre of culture and arts patronised by the fervent Buddhist Emperor Liang Wu Ti (A.D. 502-549), almost the only personality of interest to occupy the southern throne during these dynasties. When he died, aged 86, after Nanking had fallen to a rebel invader, the glory of the southern empire passed away. The Ch'ên dynasty, the last of the Nanking lines, never controlled the whole Yangtze valley, and succumbed ingloriously to the attack of the new northern power, the Sui. This dynasty was founded by a Chinese general, Yang Chien, who was himself the son-in-law of the last ruler of the

Northern Chou dynasty, which had replaced the Wei. After the fall of the Wei the north had undergone a new period of division and anarchy which was terminated by the usurpation of Yang Chien, the restoration of a Chinese imperial family, and the reunion of the empire under one sovereign in A.D 589.

The instability of the throne, and the fall in the imperial prestige, is characteristic of all these short-lived dynasties northern or southern, Chinese or Tartar. Hardly one of the prominent personalities was born in the purple. The founders were soldiers of fortune, sometimes of base extraction, sometimes like the Hsiao family who ruled in the south as the Ch'i and Liang dynasties, of ancient and noble extraction * Their descendants were all equally without prestige and for the most part, without ability In consequence every successful general or powerful minister was a rival to the Emperor, a potential usurper. The sovereign himself was a usurper, or the son of a usurper, and in no position to command the loyalty and reverence offered to an ancient line. The provinces had fallen into the hands of powerful clans who could not be displaced from the governorship, which became hereditary. This was particularly the case in the south, though many instances of such feudal revivals existed in the north-western provinces also. Szechuan was for long periods an independent kingdom owing no allegiance either to Nanking or to a northern dynasty. The Han civil service based on scholarship was almost forgotten

During this period of the Six Dynasties, or of the North and South partition as it is sometimes called, the dynasties in north and south were as follows:

SOUTH, capital at Nanking

TSIN	A D 317-419	103 years	
†SUNG	A D. 420-477	59 years	
CH'I	A D. 479-501	23 years	These dynasties were both of the HSIAO family
LIANG	A D. 502-556	55 years	
CH'EN	A.D 557-587	32 years	

*They descended in the twenty-fourth generation from Hsiao Ho, chief minister of Liu Pang, founder of the Han dynasty.

†This Sung dynasty should not be confused with the more famous Sung Dynasty of A D. 960-1278 The Sung of the Six Dynasties is called Liu Sung in China to avoid this confusion. Liu was the surname of the ruling house.

NORTH, at Lo Yang, Ta T'ung, etc

Northern Wei	A D. 386-532	149 years	
Western Wei ..	A D. 535-554	22 years	in north-west and north-east respectively
Eastern Wei	A D. 534-543	16 years	
Northern Ch'i	A.D. 550-577	39 years	
Northern Chou	A.D 557-581	32 years	
Sui (in north)	A D 581-587	7 years before conquering the southern Ch'en and re-uniting China	

Some of the northern dynasties did not rule all the north, but the minor regional kingdoms are not accorded the status of "dynasties" by Chinese historians

These melancholy conditions and the apparently incurable anarchy of the times tended to encourage the progress of Buddhism, which now became the dominant religion both in the northern and southern empires. The doctrines of the new religion offered comfort to men living in a world of violence and instability. To renounce society, abandon possessions, and seek peace in a monastery among the mountains became the fashion among thoughtful men Those who could not take the extreme step contributed to the building of temples and pagodas and their enrichment with artistic treasures.

The Court of Nanking exerted a strong cultural influence over the provinces of the southern empire, which had been backward areas in the Han period. The flight of the scholars after the fall of Lo Yang had brought civilisation into the south, and gave these provinces an importance which they had not possessed in the Han Empire, but which was to grow more and more marked in succeeding ages, until the southern provinces became the true centre of the empire.

Chapter XII

TAOISM AND BUDDHISM

(A) LATER TAOISM

The age of confusion which followed the fall of the Han Empire was a period of great importance in the history of religion in China The 3rd and 4th centuries A.D., an era of turmoil and war, saw the rise and development of the two religious systems which henceforward offered the only alternatives to Confucian orthodoxy The introduction and spread of Buddhism is described in a later section, here a brief survey of the progress made by its chief rival, Taoism, will be made

The transformation of Taoism into a religion was one result of the triumph of the Confucian school, now established as the state protected orthodox philosophy. The new Confucianism, as it emerged at the hands of the Han scholars, was entirely divorced from the ancient magical rites of the *wu* magicians The scholars who exalted the moral virtues and placed them under the patronage of the supreme deity, T'ien, Heaven, grudged any favours shown to the heterodox deities worshipped by the *wu* priests Taoism, with its doctrine of non-action, its mysticism, and its disregard of the rites and ceremonies esteemed by the Confucians, was equally frowned upon by the orthodox scholars. Both Taoism and the cults of the *wu* priesthood were deeply rooted in the cultural life of the Chinese. The rather arid doctrines of the Confucian scholars had little appeal for the mass of the people. It was not unnatural, therefore, that the principal heterodox philosophy, Taoism should join forces with the popular religion which Confucianism had rejected

This alliance, from which later Taoism, a religion more than a philosophic school, was born, was stimulated by the appearance of a new rival, Buddhism. Both Buddhism and Taoist philosophy denied the value of the world of appearances, and directed their appeal to the mystical side of human nature Since this religious instinct was neglected by Confucian orthodoxy, it was inevitable that the new creeds should awaken a widespread response.

Buddhism offered the hope of Nirvana, or eternal happiness in the Western Paradise. Taoism, which had hitherto known no doctrine of after-life, promised the achievement of immortality by alchemistic practices. Thus the cults which the magicians had popularised at the Court of the Emperor Wu were now systematised by Taoist interpretations and synthesised into a comprehensive pantheon rivalling, and often borrowing from, Buddhist legend and lore

Traditionally the new movement is ascribed to Chang Tao-ling, a native of Chekiang province—the stronghold of the *wu* cults—who lived in the reign of Kuang Wu Ti, first Emperor of the Later Han dynasty. Chang Tao-ling is said to have been born in A.D. 34 and to have lived till A.D. 156, a space of one hundred and twenty-two years, which, to say the least, appears improbable Most of his life was spent in retirement upon a mountain, where he studied alchemy and sought the drug of immortality Taoist tradition regards him as the first T'ien Shih or Heavenly Teacher (a title sometimes translated as "pope") and he is said to have achieved immortality and ascended to Heaven on a dragon There are indeed, few historical facts about Chang Tao-ling, although the present Taoist T'ien Shih claims to be his lineal descendant. Another story states that Chang Tao-ling was a descendant of Chang Liang, the general of Liu P'ang, founder of the Han dynasty, and this Chang Liang was himself a scion of an ancient family in the Han state.*

Although the stories about Chang Tao-ling are manifestly legend, it is probable that about this time the Taoist philosophy began to assimilate the practices of the *wu* cults, and the *wu* themselves became known as *Tao Shih* or Taoist Teachers. Side by side with the growing infusion of magical practices, there persisted a pure school of Taoist teaching which continued to attract scholars and poets who found Confucian doctrine unsatisfying. Early in the Tsin dynasty (A D 265-316), there was a famous coterie of Taoist scholars who called themselves the Seven Sages of the Bamboo Grove. Their lives and outlook are character-

*This Han state is not the same as the Han dynasty The former was one of the Three Tsin, the states among which the old Tsin kingdom had been divided. The supposed pedigree of the Chang Taoist popes is a fiction designed to rival the real antiquity of the K'ung family, descended from Confucius.

istic of the Taoism of this period, expressing the revolt against the formalism of Confucianism and the turmoil of contemporary politics. The historians, who are, of course, Confucians, thus describe the activities of the Seven Sages:

"They all revered and exalted the Void and Non-Action and disregarded the rites and law. They drank wine to excess and disdained the affairs of this world."

The leader of the club, Hsi K'ang (A.D. 223-262), was put to death by Ssŭ-ma Chao, father of the first Tsin Emperor, who at that time was the all-powerful minister at the Court of Wei, the northern state of the Three Kingdoms period. Hsi K'ang was in the habit of expounding his doctrines to his disciples, and had achieved a very great reputation Ssŭ-ma Chao came to listen to him, but Hsi K'ang made no attempt to treat the minister with ceremony, indeed, he did not appear to notice his presence Ssŭ-ma Chao was offended, and later hearing that Hsi K'ang in a letter to his friend Shan T'ao had spoken slightingly of T'ang and Wu, the hero founders of the ancient Shang and Chou dynasties, the minister made this a pretext to execute Hsi K'ang as one who "disturbed the times and confused right doctrine." The real cause of his enmity was that as he himself was contemplating usurping the throne of his nominal sovereign, the Emperor of the Wei dynasty, he considered that Hsi K'ang's slighting reference to T'ang and Wu was a covet criticism of himself, these ancient heroes being, in the opinion of the Taoist, usurpers, not legitimate heirs to the throne.

Shan T'ao, Hsi K'ang's friend, was also one of the Seven Sages, and a native of the southern kingdom of Wu. Under the Tsin dynasty he held high office as president of the Board of Civil Service He seems to have been less eccentric than his friends. Liu Ling, another of the Seven, was a great drinker. He used to declare that to a drunken man the "affairs of the world appear as so much duckweed in a river." He rode about the capital in a small cart drawn by deer, with a servant following with a large pot of wine. Another servant carried a spade, and had orders to dig a grave and bury his master forthwith without ceremony, wherever he chanced to die. Yüan Chi and Yuan Hsien were

uncle and nephew, and like Liu Ling were heavy drinkers They were both famous musicians although soldiers by profession. Yuan Hsien had a shameless passion for a lady's serving maid. On one occasion, when he was entertaining guests, he saw the lady send the maid away Rising without apology, he hastily borrowed one of his guest's horses and pursued the young woman, bringing her back on his crupper.

Yüan Chi, his uncle, though sincerely attached to his mother, and sick with grief at her death, scandalised the scholars by drinking heavily throughout the period of mourning. Wang Jung and Hsiang Hsiu, the other members of the Bamboo Grove, were both scholars of distinction. Wang Jung's brother, as magistrate of a town in the northern provinces, put into practice the Taoist theory of government by Non-Action, with results which were a conspicuous success. Hsiang Hsiu wrote the best known commentary on the works of Chuang Tzŭ, although, as he died before it was complete, it has generally been wrongly attributed to Kuo Hsiang, who only completed the unfinished portion

All the Seven Sages of the Bamboo Grove cultivated these eccentricities as a deliberate protest against Confucian formality and the elaborate rites with which the scholars wished to surround every human activity. Behind the façade of drunken eccentricity they pursued the true Taoist ideals of simplicity and harmony with the rhythm of life. In their writings, which took the form of commentaries on the Taoist classics, they developed the philosophic side of the doctrines which Chuang Tzŭ had propounded. Wang Pi (A D. 226-249), a writer who lived in the period of the Three Kingdoms, after the fall of the Han Empire, devoted himself to this branch of Taoism His commentary on the *Tao Tê Ching* shows that the higher interpretation of the old Taoist writers was still understood in the 3rd century. Indeed the philosophic character of Taoism never entirely disappeared even when the new religious and magical type of Taoism had gained the ascendant. In the tenets of more than one of the Buddhist schools, and particularly in the Ch'an School, Taoist influence is very evident.

Only a few years after the Seven Sages of the Bamboo Grove there flourished a Taoist writer who emphasised the new magical

element which was transforming the old philosophy. Ko Hung, who wrote under the pseudo name of Pao P'u Tzŭ, was a native of Kiangsu, a contemporary of Tsin Yüan Ti, the first Emperor to re-establish the capital at Nanking after the fall of Lo Yang to the invading Hsiung Nu. Ko Hung wrote a book in two sections, an "inner" treatise which deals at length with the alchemistic processes by which the drug of immortality may be made, and the transmutation of cinnabar and mercury into gold. His "outer" treatise deals with matters of philosophy and government on Taoist lines

The inner treatise is of considerable interest as early evidence of the extent to which the theory of alchemy had been developed and associated with Taoism. After arguing at some length that the long-lived animals demonstrated the possibility of man attaining immortality, since if animals could live so long, man with the aid of knowledge and power could certainly surpass mere brutes, Ko Hung gives several instances of men and women who had attained immortality in the past. One chapter of his book is devoted to methods of attaining immortality, for which he gives recipes. These drugs were not only believed to be capable of postponing death for centuries, but also rejuvenated the body. The results to be expected were that:

> "White hair will become black, lost teeth will grow again, the strength of the body will be renewed. He who takes it will never grow old, an old man will become a youth once more, he will live for ever and not die."*

These drugs, and others of a similar nature, enabled the immortal to walk through fire without being burned, to walk on the surface of water without sinking, to rise into the air, to command the spirits and demons, and to revive the dead.

In conjunction with the study of drugs to procure immortality Ko Hung devotes much space to the method of making gold, which it was hoped could be produced by chemical action. He gives most definite and precise instructions about this process, though he does not actually say whether he had succeeded in

*_Pao P'u Tzŭ_, Nei Pien 4.

making gold himself. As an example of the chemical knowledge and methods of his time his process is instructive:

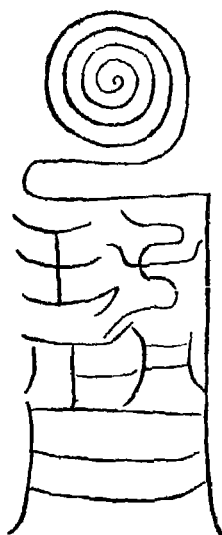
"PROCESS FOR MAKING GOLD.

"Use a large iron vessel 1 ft. 2 in. in diameter, 1 ft 2 in in height, and a small iron vessel, diameter 6 in. Take one catty of pounded red clay, one catty of nitre, one catty of talc, one catty of Tai iron ore*, half a catty of sulphur, and one catty of ice. Pound all together until fine and mix thoroughly. Daub the inside of the small iron vessel to a thickness of two and one-tenth inches with one catty of mercury, half a catty of cinnabar and half a catty of '*liang fei*.' The method of making '*liang fei*' is to heat ten catties of lead in an iron dish on a furnace, soon three ozs. of mercury will appear out of the melted lead, ladle this out with an iron spoon. It is called '*liang fei*.' Stir all [the above ingredients] together until the mercury cannot be seen. Then put [the mixture] away in the little iron vessel, and cover it with talc and an iron lid to protect it. Put the iron vessels on to the furnace. The melted lead will sink into the big vessel. Take out of the small vessel the top half inch of molten matter, heat it on a fierce fire for three days and nights; it becomes what is called red powder. Next take the ten catties of lead and heat it in an iron vessel for twenty days and nights, then transfer it into a copper vessel, and add the red powder to the molten lead. Stir with a spoon one square inch in size and it immediately changes into gold "†

Ko Hung also wrote about spell magic, and gives specimens of charms (Fig 44), which were of use to those who dwelt in

FIG. 44. *A Taoist Spell.*

*Iron ore from Tai Chou in Shansi province. A catty is equivalent to one and a half pounds avoirdupois

†*Pao P'u Tzŭ* Nei pien 16. The spoon for stirring the mixture at the climax of the process was possibly one square inch in size because this measurement was believed to be that of the human heart.

out-of-the-way places, mountains or forests These he recommended should be pasted upon the door, beams and pillars of the house.

The new school of alchemistic Taoism also prospered in the northern empire under the Wei dynasty (A.D. 386-557), where it received imperial patronage. In A.D. 415 a certain K'ou Ch'ien-chih, a man of good family and younger brother of a provincial governor, who had dwelt for some years as a hermit on Mt. Sung in Honan, had a vision in which Lao Tzŭ appeared to him. From the divine founder of Taoism K'ou received a new book of doctrine in twenty rolls, and also was appointed *T'ien Shih*, or Celestial Teacher, chief of the Taoists among mortal men.* In A D. 423 K'ou had a further vision in which the great grandson of Lao Tzŭ, himself an immortal, appeared to give further instructions and confirm K'ou's position as T'ien Shih

In A D 428 K'ou Ch'ien-chih left his retreat on Mt. Sung and came to the Court of the Wei Emperor T'ai Wu (A.D. 424-452), which was then established near Ta T'ung Fu in north Shansi. The Emperor welcomed K'ou and accepted him as the chief of the Taoists. He and his disciples were lodged at the public expense, and a temple built for them outside the capital. The new cult was highly honoured, the Emperor himself paid a visit to the temple in the year A D. 442, and received a book of charms After this every Emperor of the Wei dynasty used to proceed to the Taoist temple at his accession and obtain a charm book.

A few years later, in A D 448, K'ou Ch'ien-chih died, but the death of their leader did not destroy the faith of the disciples. Indeed, it was the cause of renewed honours.

> "After his death his corpse stretched and when the disciples measured it, it was found to be 8 ft. 3 in. in length, but after three days it began to shrink and when coffined was no more than 6 in. long Then the disciples believed him to be one who had attained immortality on death, and had become transformed and disappeared as an immortal."

Taoism prospered under the Wei dynasty, and when the capital

*This incident sufficiently refutes the claim of the Chang family to have held the rank of *T'ien Shih* from father to son since the time of their supposed ancestor Chang Tao-ling.

was moved to Lo Yang in Honan, the Taoist temple was established there. Numerous other adepts appeared, though none attained the fame of K'ou Ch'ien-chih. It was to be expected that the Taoists should resent the competition of Buddhism, which, being an alien creed, offended the conservative sense of the nationally minded Chinese, nevertheless the Taoists found it wise to compromise with the intruder to some extent. K'ou Ch'ien-chih, it would appear, described Buddha as one who had found the Tao among the "western barbarians" (Indians) and become an immortal. As such he might be honoured, though not of course in a manner equal to Lao Tzŭ or other Taoist immortals of superior rank.

The rivalry of Buddhism and Taoism was the cause of persecutions which fell equally upon both religions. Taoism had escaped the persecution directed against Buddhism by the Emperor of the Wei dynasty in A D. 444. In fact, the Taoists inspired this movement on the grounds that Buddhism was an alien creed, which had no traditional connection with the golden age so beloved by all Chinese scholars. In A D 555 the ruler of the northern Ch'i state, which occupied the north-eastern provinces, called a congress of Buddhists and Taoists with the idea of unifying the two rival religions. The priests of Buddha having proved victorious in the argument, the Emperor ordered all Taoist priests to shave their heads and become Buddhist monks. There was at first some opposition, but when four recalcitrant Taoists had been put to death, the others "obeyed the decree" and thenceforth there "were no Taoists in the Ch'i domain."

The persecution, however, was not of long duration, for not many years later, when the north had passed under the rule of another dynasty, the Northern Chou, the two religions seem to have been as flourishing as ever. In A.D 574 the Emperor of that dynasty issued a decree proscribing both Taoism and Buddhism. The priests and monks were made to return to secular life, their scriptures were burnt and the images of Buddha and the Taoist divinities smashed. A few years later in A D 579 his successor reversed this policy and restored the temples of both cults, and it is improbable that these short lived persecutions had much effect except in the vicinity of the capital. Throughout the period

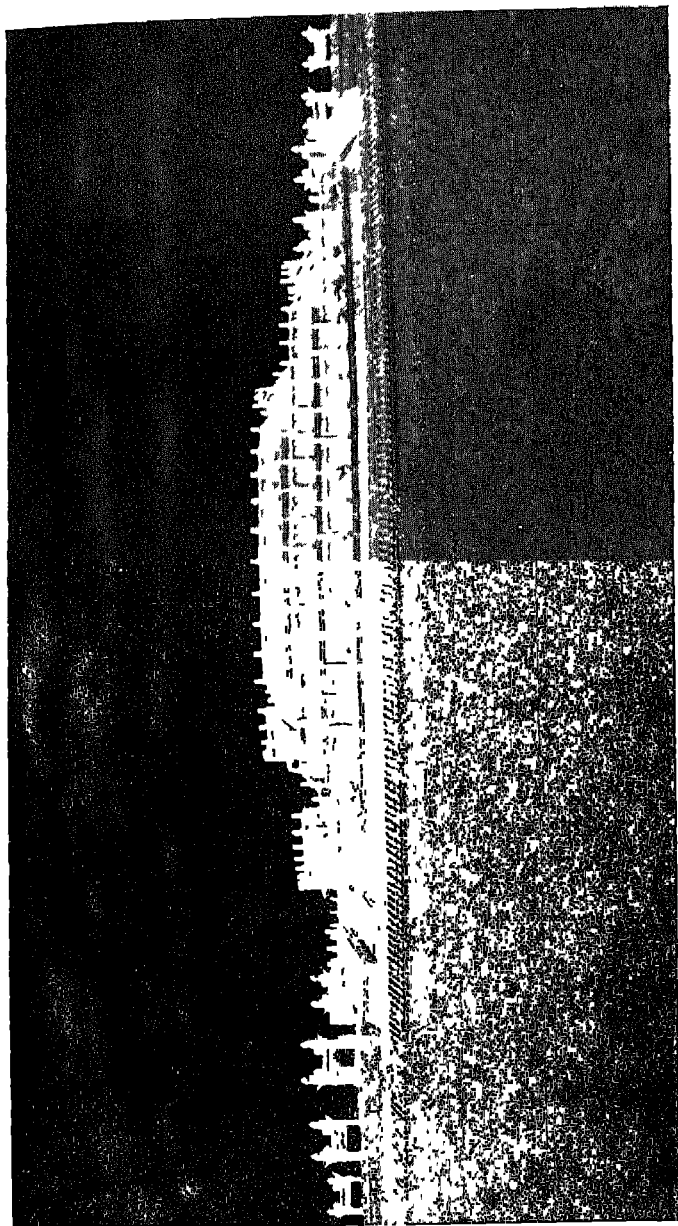



PLATE I THE ALTAR OF HEAVEN, PEKING

PLATE II THE ALTAR OF HEAVEN PREPARED WITH OFFERINGS FOR SACRIFICE

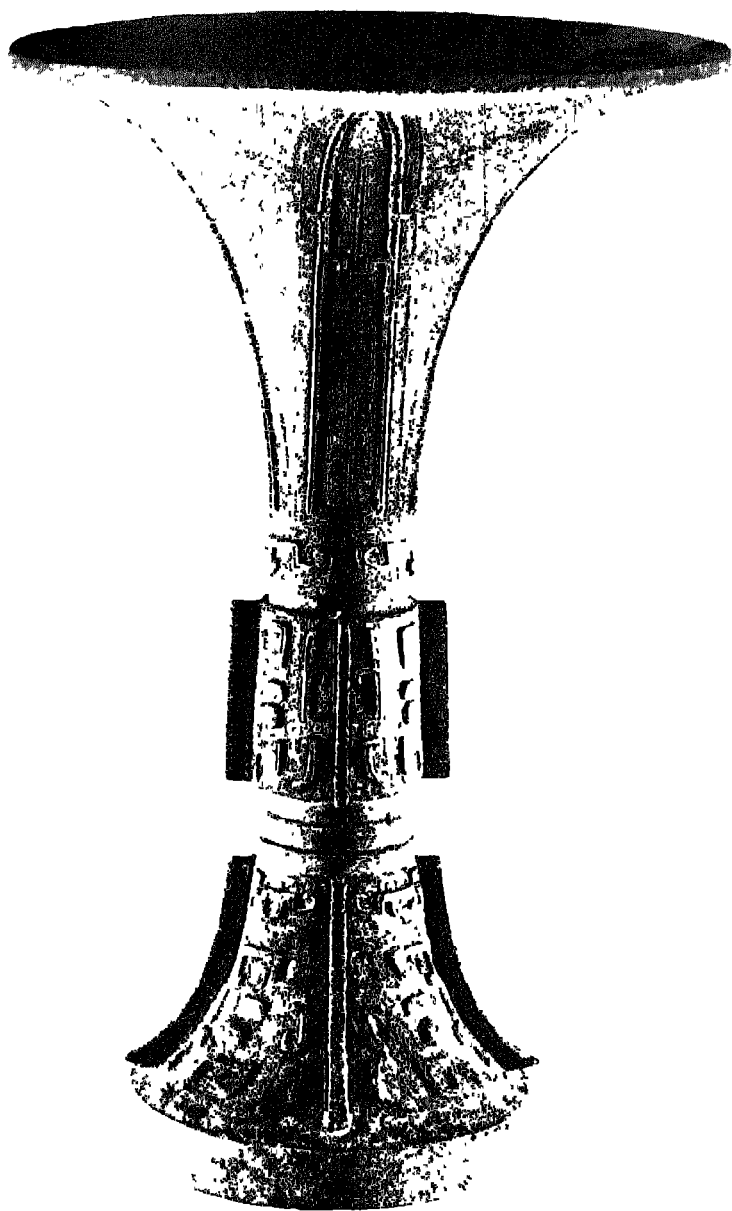



PLATE III BRONZE VESSEL, KU, CHOU PERIOD

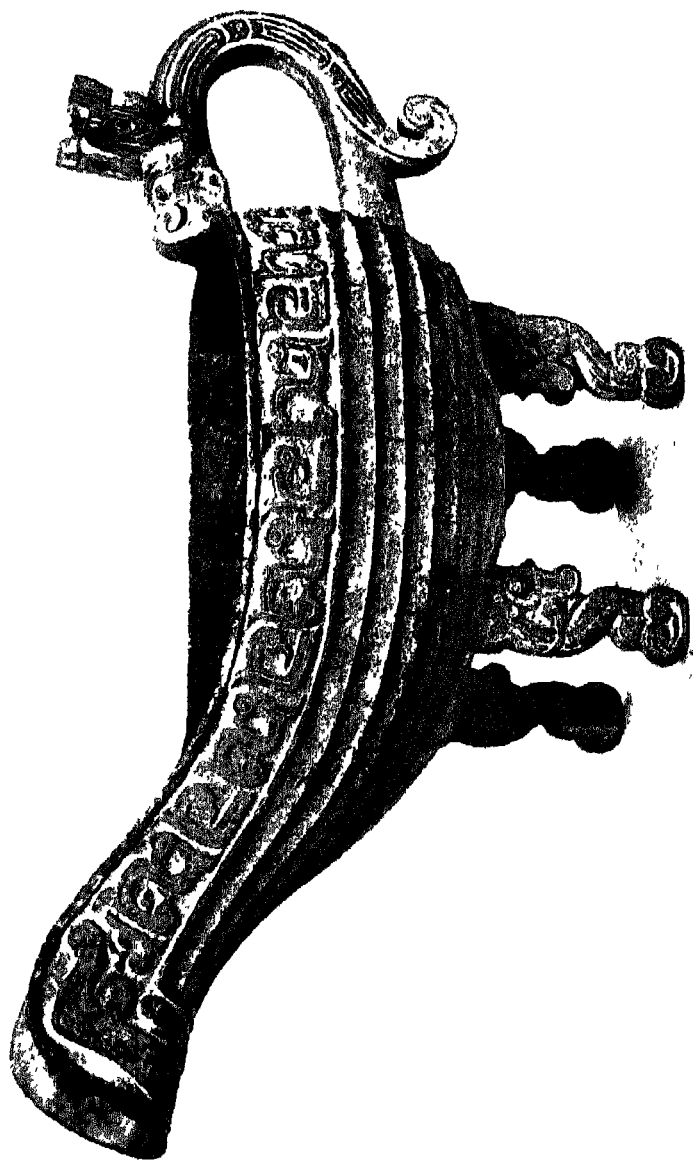



PLATE V HORSE HEAD OF JADE, HAN DYNASTY

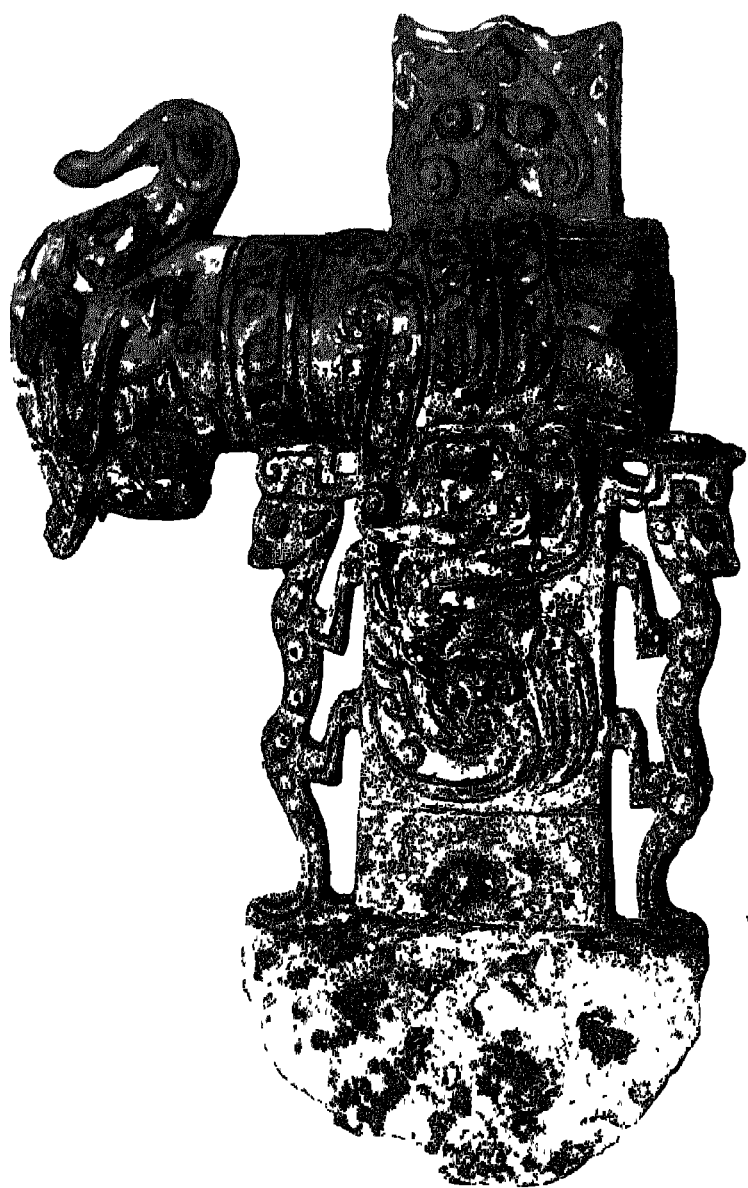
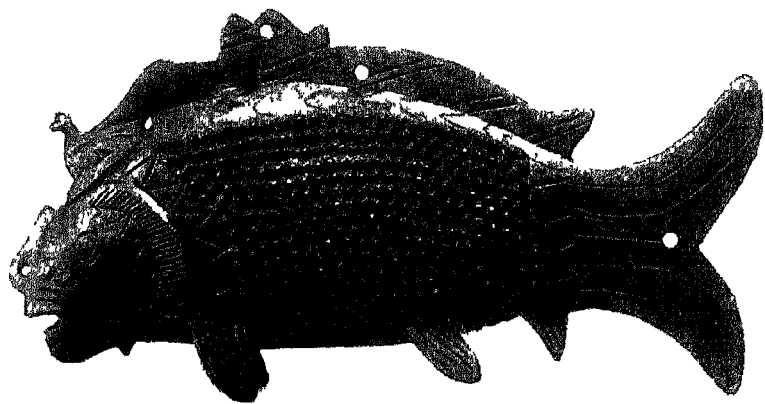



PLATE VII (*a*) GOLD BUCKLE FROM LAK LANG, KOREA HAN DYNASTY
(*b*) BRONZE FISH, CHOU PERIOD

PLATE IX
POTTERY FIGURES
T'ANG DYNASTY
(*a*) A SOUTHERN INDIAN
(*b*) AN ARMENOID TYPE

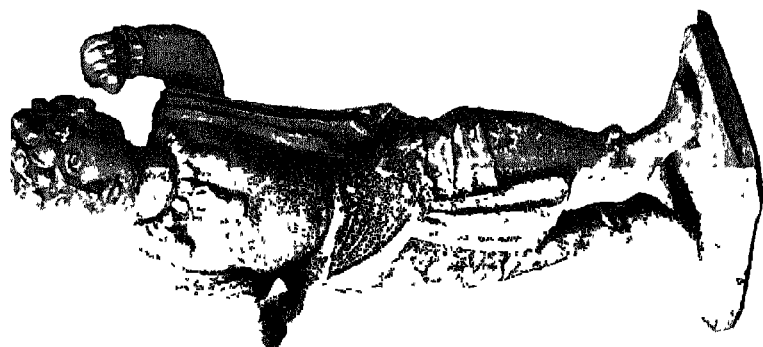
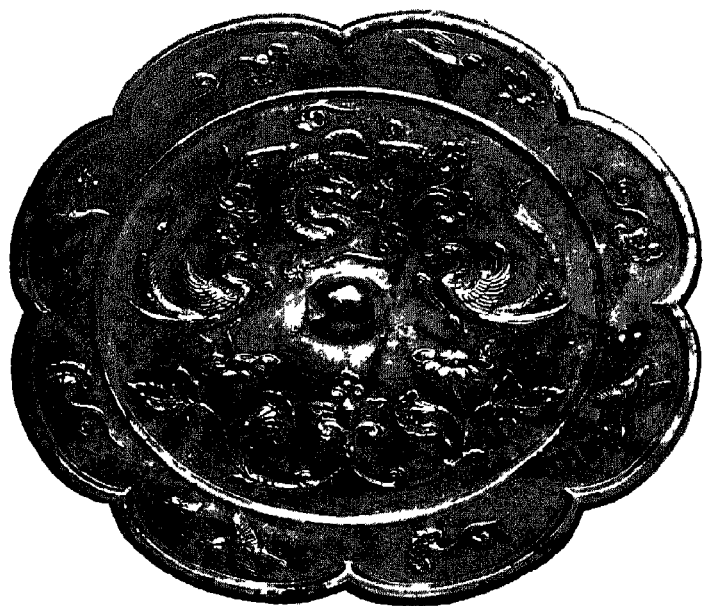



PLATE XI BRONZE MIRRORS, T'ANG DYNASTY

PLATE XII LANDSCAPE ATTRIBUTED TO WU TAO-TZU OF THE T'ANG DYNASTY

PLATE XIII LANDSCAPE BY LI CH'ÊNG "WOODS IN WINTER."
SUNG DYNASTY

PLATE XIV PIGEON BY THE EMPEROR HUI TSUNG SUNG DYNASTY

PLATE XV HORSE AND KHOTANI GROOM, BY LI LUNG-MIEN SUNG DYNASTY

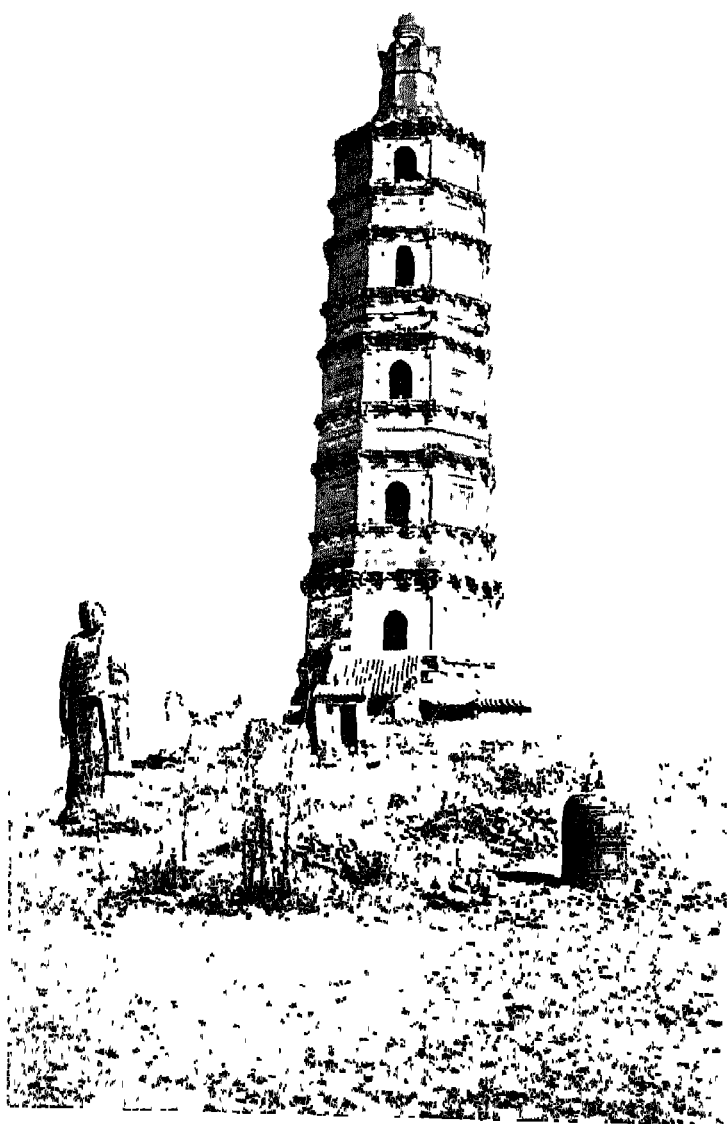



PLATE XVI TO PAO T'A PAGODA, LIANG HSIANG HSIEN, HOPEI, THIRTEENTH CENTURY

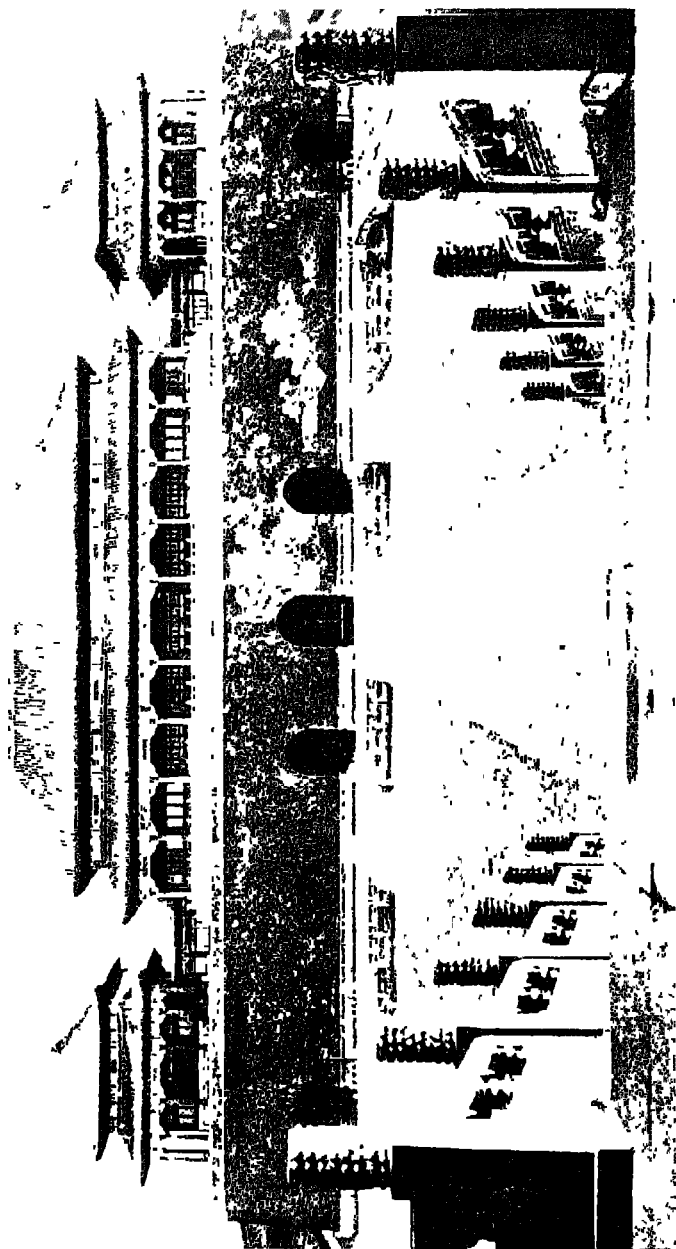



PLATE XVII WU MEN, GATE OF THE FORBIDDEN CITY, PEKING. MING DYNASTY

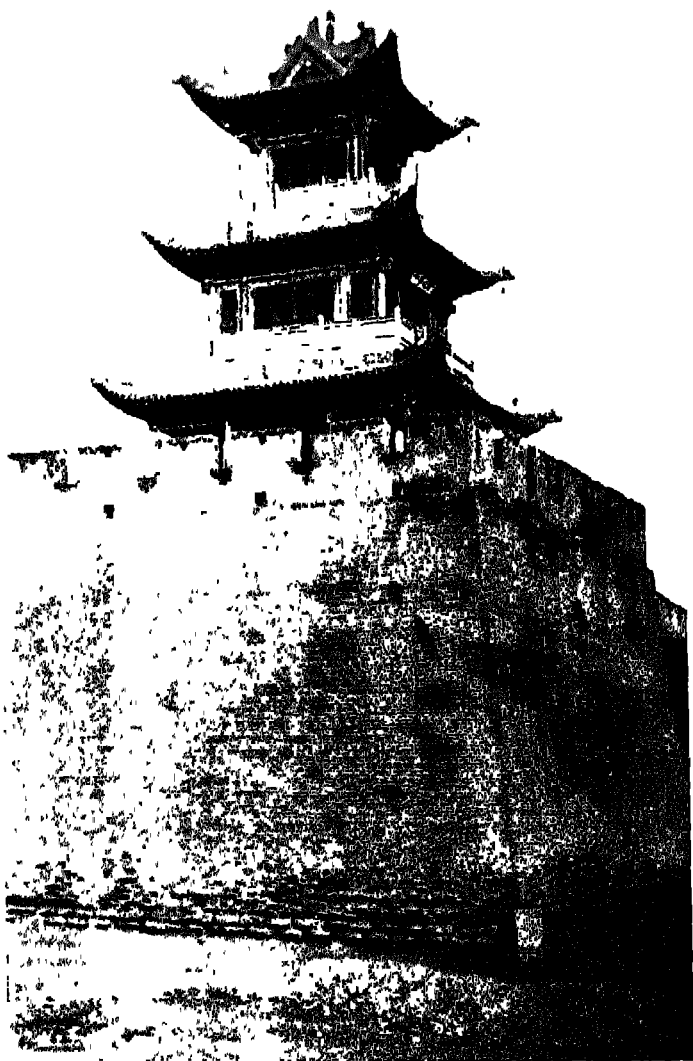



PLATE XVIII CITY WALL AND CORNER TOWER, T'AI KU HSIEN, SHANSI

PLATE XIX LACQUER SCREEN, SEVENTEENTH CENTURY

PLATE XX PHEASANTS AND FLOWERING TREES BY WANG SHIH A D 1662

of division the new Taoist cult gained steadily in influence both with the mass of the people, and also in Court circles. Taoism does not seem to have suffered any persecution in the southern empire, while the influences of Taoist priests and magicians at the Court of Nanking was a factor of importance.

By the end of the 6th century Taoism was firmly established in its new form as a popular cult, the rival of Buddhism It had also adopted the pseudo-sciences of alchemy and astrology as an integral part of the system. The object of the Taoist devotee was to achieve immortality by means of magical practices and carefully compounded drugs. If this high aim was beyond his powers, he might at least hope to gain wealth by making gold, or failing that, to prolong his life by the study of drugs less potent than that of immortality The consequences of this new turn to Taoist speculations were far more important than has usually been admitted.

Alchemy and medicine became identified with Taoism, and Taoism was an unorthodox cult, opposed by the scholars of the Confucian school. When Taoism was favoured by the Court the Confucian hostility could be ignored, but when Taoism lost this support, the weight of the Confucian influence was against it. Taoism therefore gradually became a despised popular religion, regarded as gross superstition by the scholars and educated classes As alchemy and medicine were the stock-in-trade of the Taoist priest, these sciences shared the contempt lavished upon Taoist teaching Alchemy, though its hopes were too high and its methods unsound, was none the less the parent of true scientific chemistry In China all such sciences incurred the derision which was meted out to Taoism as the superstitious cult of the "stupid people." Medicine, which was inspired by Taoist ideas about the *elixir vitæ*, shared this neglect Educated persons left such practices to Taoists, who were more and more frequently men of low origin and little learning

This was the cause of the divorce between learning and science which prevented the Chinese from discovering the principles of the exact sciences. Discoveries were made, but they were left to the Taoist priests The magnetic compass was used to determine the favourable location of graves. Gunpowder had been dis-

covered by Taoist investigators in their search for the "philosopher's stone," yet until the Mongol invaders put it to the uses of war, the Chinese had only employed explosives in fire crackers, used to scare away evil influences. Science, anything which smacked of alchemy or the drug of immortality, was treated as a charlatanism only fit for the ignorant and lowly. The scholar should concern himself with book learning, literature, history, poetry—but not with science.

(B) BUDDHISM

Prior to the contact with European civilisation in the 19th century, Buddhism was by far the most important cultural influence of foreign origin introduced into China in the historical period The effect of Buddhism upon Chinese thought, art, and the customs of daily life is comparable to the influence of Christianity upon the nations of the west Buddhism is the only foreign element in the Chinese culture which has penetrated every class of society, maintained its hold over long centuries, and become accepted as an essential part of the national civilisation Politically the history of China can be broadly divided into the feudal and imperial periods, and in religious history there is a Buddhist and pre-Buddhist age.

The new creed not only altered the religious system of China; it familiarised the Chinese with the pre-Buddhist Indian philosophies and religions, and in the realm of art it served as the conduit by which Hellenistic influence flowed eastward across Central Asia. So many sided and powerful a force as Indian Buddhism could not fail to modify the Chinese civilisation profoundly, but in the end it was Buddhism, rather than Chinese culture, which underwent the greatest transformation. The merits of Indian philosophy have been much discussed in the west where they have found vigorous defenders, but to the Chinese, a people with an intensely practical side to their character, the illimitable vagueness of Indian speculation proved unpalatable As time passed they began to interpret Buddhist doctrine in terms of moral virtues already familiar from the Chou Schools of philosophy. Chinese Buddhism reshaped under these strong native influences

took a form which bears only a faint and superficial resemblance to the Indian system from which it sprang.

The Chinese artists who were called upon to illustrate episodes in the life of Buddha naturally portrayed the Indian sage in surroundings with which they were familiar, just as the Italian primitives painted the Christian saints in the costumes of renaissance Italy. The illustration reproduced in Fig 45

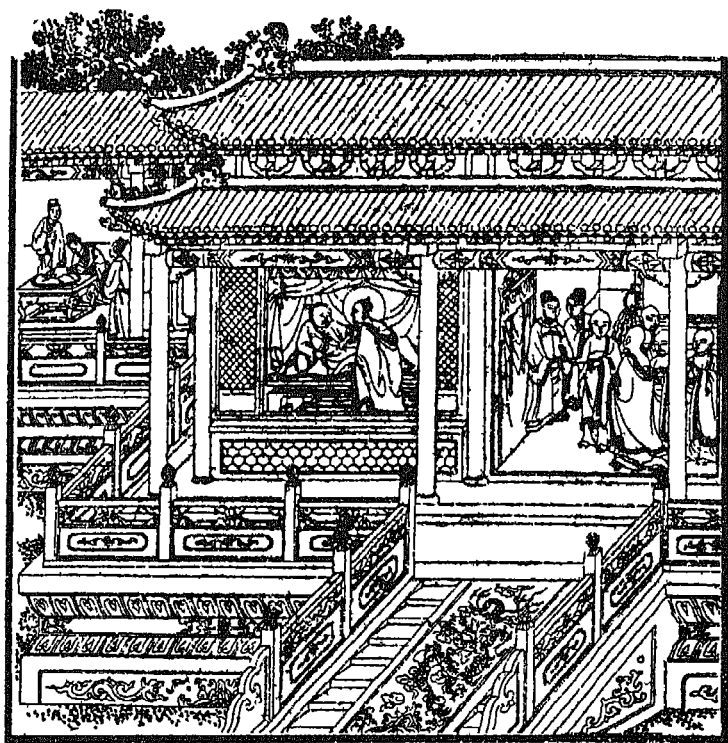



FIG. 45. *Buddha at the Death-bed of his Father.*

shows Buddha attending the death-bed of his father, King Suddhodana, in a typical Chinese palace hall.*

The exact nature of the original Indian doctrine is itself very uncertain Buddhism, when it reached China in the 1st century

*Reproduced from L Wieger, S.J , *Bouddhisme Chinois*, 1913.

A.D., was already an old religion, with some four or five centuries of history behind it. The dates of Gautama Buddha's life are not precisely known It has indeed been argued that no such person ever existed, or that if he did, he was not the founder of Buddhism, but a reformer who reshaped an ancient creed. This controversy must be left to Indian historians and Sanskrit scholars. Conservative opinion regards Gautama as a historical personage, who probably lived and preached in Northern India in the first half of the 5th century B C., the date of his death being either 479 or 477 B C. No contemporary evidence either of his life or teaching exists in any language. The monuments of King Asôka, *circa* 272-231 B C, attest the existence and flourishing state of Buddhism in India at that time, but the evidence of these inscriptions does not always confirm the theology of the most conservative Buddhist School, the Hinayana.

At an unknown date, usually believed to be in the early part of the 1st century A.D., Buddhism split into two opposing camps, Hinayana and Mahayana, the Lesser and Greater Vehicle respectively Needless to say, the Hinayana do not themselves accept this opprobrious epithet, applied to them by their adversaries. The Hinayana, who to-day are the Buddhists of Ceylon, Burma and Siam, hold to what they believe to be the true and simple doctrines of Gautama, and regard the Mahayana system as a tissue of inventions and accretions, having little in common with the primitive doctrine. Modern scholars have been inclined to dispute this traditionally accepted view It is now contended that Mahayana Buddhism, though perhaps not holding closely to the teaching of Gautama, is none the less founded upon a religious system as ancient as the Buddha, if not earlier, incorporating beliefs long current in India, but which were ignored, or perhaps opposed, by the primitive Buddhists.

In the Hinayana system, Gautama is the Buddha, the sole Buddha, who now reposes for ever in Nirvana—the absence of desire and striving—having left to mankind a simple rule by which they may attain a like bliss, either at the end of their present incarnation, or at most at the end of seven reincarnations. This creed knows no prayers, invocations or offerings, for Buddha is not God, but man who has attained perfection and thrown

off the *Karma* of sin, which dooms mankind to successive re-incarnations in the world of pain and sorrow.

Whether Mahayana Buddhism was reshaped under Hellenistic influences which took a less melancholy view of human existence, or whether it represented the Indian taste for cosmic speculation (which Gautama condemned as profitless) the "Greater Vehicle" framed what is in effect an entirely new religion. Gautama now becomes merely one reincarnation in a vast series of Buddhas stretching from an illimitable past into an equally infinite future. Not only in this world but in other worlds "numerous as the sands of the Ganges" Buddhas have lived and preached at intervals separated by myriads of years, from a time past human calculation This world is but a speck in space and an instant in time ; it will pass away and Maitreya will be the Buddha of the next period.

In the later developments of Mahayana Buddhism the Buddhas past and to come gradually become gods of transcendent power, hearkening to the prayers of mankind, responding to invocations, delighting in offerings and incense Ultimately Amida or Amidabha Buddha, a personage unknown to the early Buddhist scriptures and conjectured to be a revival of the Indian Brahma or the Zoroastrian Ahura-Mazda, became the object of almost exclusive devotion, and his pure paradise, the "Western Heaven," the goal to which the pious may aspire Nirvana and Gautama Buddha are almost forgotten.

It was Mahayana Buddhism which was introduced into China in the year A D 65 in the reign of Han Ming Ti, of the Later Han dynasty. The Hinayana system, though known to the Chinese, never gained any wide currency in the Far East, and died out there altogether in the 10th century. Both forms of Buddhism are extinct in their native India, where they succumbed under the brutal impact of Islamic invasion and the subtle opposition of the ancient Hindu religion. According to Chinese history, the Emperor Han Ming Ti dreamed that there was a powerful divinity in the west, and sent an embassy to bring his cult to China The ambassador travelled to India and returned with Buddhist images and Sanskrit books, which were translated into Chinese at Lo Yang by two Indian monks who had accompanied the envoy. These two Indians were Kasyapa-Matanga

and Dharma-aranya, listed in the index of the authors of the Chinese *Tripitaka*, or collection of Buddhist Scriptures, as the first to translate Buddhist works into Chinese They worked at the White Horse Monastery outside Lo Yang, so called from the white horse which carried the sacred books from India to China. This monastery, Pai Ma Ssŭ, or rather one upon the same site, still exists.

It is probable that some knowledge of Buddhism had already been acquired by the Chinese envoys to Central Asia and Bactria, for that region, now purely Mohammedan, was an early and active centre of Buddhism. It is even probable that the first Buddhist mission came from one of these countries, and not from India proper. The Han Emperors, as has been mentioned in an earlier chapter, were keen religious innovators, and were always prepared to welcome a new deity. But the welcome given by the Court to Buddhism remained without any influence on the nation as a whole in the Han period Buddhism was a curiosity of the capital, its teaching was in the hands of foreigners, and it does not appear to have exercised any notable influence either on the masses or upon the educated class, which was strongly Confucian This early imperial patronage of foreign monks is exactly comparable to the welcome accorded to the first Catholic missionaries by the last Ming Emperors and their first successors of the Manchu dynasty In both cases the first contact led to no visible results

The translation of Buddhist works and the propagation of the faith in the Han period were almost entirely the work of foreigners. Only one Chinese author or translator appears in the list. The others were drawn from a variety of nations in Central Asia, Indians, Turanians, Parthians, Kushans, like the equally international recruitment of the ranks of the Christian Missionaries in modern China. The vogue of Buddhism was in fact confined to the Court, and its teaching firmly opposed by the Confucian scholar class, who formed the dominant party among the educated and had the administration of the empire in their hands. Had the centralised empire endured, relying as it did on this scholar class, it is probable that Buddhism would never have taken firm root in China, and would have withered away as Nestorian Christianity, introduced and flourishing in the T'ang dynasty (7th to 10th

centuries) disappeared, leaving as its only record the famous Ch'ang An tablet

The fall of the Han Empire, and the partitions and barbarian invasions which followed, opened the road to Buddhism, and effected a religious revolution which was the most significant development in what the historians of Confucian tradition describe as an "Age of Confusion." While Indian translators, assisted by an increasing number of Chinese colleagues, continued to work upon the vast task of rendering the Sanskrit originals into Chinese, the northern Tartar dynasts extended their favour to Buddhist monks in the conquered provinces. The Confucian scholars had for the most part fled south when Lo Yang fell. Those who remained in the north were not favoured by the invaders, who rightly suspected this class of secret loyalty to the Chinese Emperor and hostility to the conquerors. The new sovereigns, needing the assistance of a literate class, found in the Buddhists and Taoists, who had been the opponents of the orthodox Confucians, a body of scholarly men who were trustworthy and loyal.

In the 4th and 5th centuries A D. there was an immense expansion of Buddhism in northern China This area being in contact with the Central Asiatic trade route, by which communication with India was made, it was naturally the region to which the Indian missionaries of Buddhism paid the greatest attention The petty kingdoms of northern China under their short-lived Tungus and Hun dynasties were distinguished in the richness and productivity of their Buddhist schools, by which alone they are remembered. At Ch'ang An in A.D. 401-412, then the capital of the small state of Later Chin, the celebrated Kumarajiva, a monk of Indian descent born in Central Asia, worked and taught, spreading the doctrines of new schools of Buddhism, hitherto unknown in China.

Nevertheless the Buddhists did not enjoy uninterrupted favour. Inspired usually by Taoist opposition, persecutions were directed against them in all the states of China, but, fortunately for Buddhism, the persecutions were not simultaneous, and did not endure for long. In A.D. 446 the ruler of Wei, the northern empire, issued an edict against the Buddhists, but as his rival in the Chinese Empire was prepared to receive them, the monks were

able to escape its effects A few years later Buddhism was at the height of its favour in Wei, and was enjoying the fruitful patronage of the great Buddhist Emperor Liang Wu Ti of the southern Chinese Empire. These persecutions never resembled those so familiar from western religious history. There were no burnings, no torture or massacre of the faithful At most the authorities ordered the destruction of some or all of the monasteries, and forced monks and nuns to return to family life, sometimes by the expedient, repugnant to all good Buddhists, of mating the monks and nuns themselves.

These ineffective and intermittent persecutions failed to arrest the progress of the new religion. In A.D. 405 the historians confess that nine out of every ten families in the northern empire had embraced the Buddhist faith. The proportion is significant, for the non-Buddhist tenth fairly represents the educated class of Confucian scholars and Taoist sectaries who alone remained detached from the new religion. The mass of the people, finding in Buddhism a religion which offered them in the next world all that they lacked in their present existence, had adopted the practice of the foreign faith, even if the dogma and theory were but little understood.

A hundred years later, in A D. 500, it is admitted that the whole of China, north and south alike, was Buddhist. That is to say, Buddhist rites and ceremonies were everywhere practised; temples and monasteries had arisen in every district; priests and nuns were numerous and highly respected. A few Confucian scholars refused for themselves the salvation which their own families and particularly the women, eagerly embraced. The Taoists, borrowing shamelessly from the rival religion, maintained a more effective opposition

It would be a mistake to represent this national conversion as a complete break with the religious past, such as marked the conversion of the Roman Empire to Christianity. Strange as it may seem to westerners, the Chinese have a capacity for believing, or at least honouring, several apparently incompatible doctrines at the same time. It is the most remarkable manifestation of the national gift for compromise. At the present time the vast majority of Chinese honour Confucius, worship Amida Buddha, and use

Taoist rites without any sense of incompatibility. "Three ways to one goal" they say. It would, however, be incorrect to treat this attitude as a mere materialist desire to be on the safe side, a kind of triple insurance against calamity.

In the Far East religion has never assumed the categorical absolutism of the western religions deriving from Judaism Neither Buddha, nor Confucius, nor the Taoist sages ever said: "Thou shalt have none other gods but me." Buddhism, in its Mahayana form, accepts, and at the same time ignores, the complicated pantheon of Hinduism The gods exist, but the worship of them is not the best way to escape from the cycle of reincarnation and attain everlasting repose in the Western Paradise. Confucius, who undoubtedly revered the deities of his own time, refrained from proclaiming them as the only true gods, perhaps because alien systems were unknown to him. For the men of his time worship of the gods consisted in the strict fulfilment of certain ritual acts, and was not associated with ideas of personal salvation Taoism, in becoming a religion rather than a philosophy accepted any and every deity and made them its own, with an appropriate place and function in the celestial hierarchy. Buddha himself did not escape this fate.

It is significant that this tolerant attitude was never adopted by the Chinese converts to Islam. The Mohammedan Chinese regard all their Buddhist, Confucian and Taoist compatriots as "unbelievers" with whom the Moslem will not intermarry True to the exclusive attitude which Islam borrowed from Judaism, they remain a class apart.

Buddhism, therefore, although accepted by the Chinese people did not displace the older gods and the worship of the ancestral, spirits. The Buddhist emperors continued to worship Heaven, and the gods of the soil and grain. Taoism enriched its pantheon with Buddhist and Hindu deities of Indian origin. Nevertheless, early Chinese Buddhism retained its corporate character and regarded the native systems as opponents. The priesthood were perhaps exclusively Buddhist, venerating only the Three Precious Ones, Buddha, The Law, and the Priesthood. The present tolerance which has wholly submerged Buddhism in a tripartite system in which Confucianism and Taoism hold equal rank, had

not then quenched the faith and vigour of the missionary priests.

The translation of Sanskrit books was continued by a succession of monks and laymen, both Indian and Chinese, and with the wider knowledge of Sanskrit, the literary quality of the translations, which had at first been poor, began to improve. Earnest pilgrims, not content with the partial versions known in China, undertook hazardous voyages across the breadth of Asia in search of purer sources. In A.D 399 Fa Hsien, a Chinese monk of Ch'ang An, travelled across Central Asia to India, and has left a valuable record of his wanderings * After passing through the region known to-day as Chinese Turkestan, where he found Buddhism in a flourishing state, the pilgrim crossed the Hindu Kush and made his way into India through Afghanistan At that time, before the rise of Islam, the region now famous for its fanatical Mohammedanism was a centre of Buddhism, the cities adorned with pagodas and monasteries from which some of the most famous doctors of the faith had come. In India itself, Buddhism, though still an active force, was already showing signs of the decay which ultimately destroyed it. Many of the famous sites and centres of Buddhist learning were already desolate or dying.

After several years in India Fa Hsien sailed from Bengal to Ceylon, then as now, a country of Hinayana Buddhism. From Ceylon the adventurous pilgrim took ship for Java which he reached after narrowly escaping shipwreck. This country was not Buddhist at that time. At last Fa Hsien returned to China by sea, landing on the Shantung coast after a perilous voyage, in which, the captain having lost his reckoning, the travellers passed seventy days at sea without sighting land, and finally reached the Chinese coast hundreds of miles north of their proper destination, which was Canton. Fa Hsien had been fifteen years away from his native land. After his return he settled at Nanking, the capital of the southern empire, and devoted his remaining years to translating the numerous books which he had brought home through so many dangers

*Several English translations exist. The best known is H. A. Giles' *The Travels of Fa Hsien*. Cambridge. 1923.

A hundred years later, Liang Wu Ti, the most famous Emperor of the southern Chinese realm, took Buddhism under his protection. By his orders and under his patronage the first *Tripitaka* or collection of all Buddhist scriptures was prepared and published in the year A.D. 517. Ten years later, the Emperor himself, in spite of the protests of the Court, enrolled himself as a monk and entered a monastery at the capital.* He was only persuaded with difficulty to return to the throne, and insisted on paying the monks a large sum as a ransom for leaving their order. Two years later, in A.D. 529, he once more renounced the world, and was again persuaded to leave the monastery after paying a further large ransom. Confucian historians console themselves by pointing out that this great ruler by neglecting his empire exposed it to the perils of rebellion and himself died at the age of 86, when the capital had fallen into the hands of a soldier of fortune. In the northern empire Buddhism was honoured in equal measure. In A.D. 533 Hsiao Wu, ruler of the Wei state, then dominant in the north, issued a second edition of the *Tripitaka*, shortly after the Empress Hu of this dynasty, a fervent Buddhist, had spent vast sums in building temples and monasteries.

As the knowledge of Sanskrit works translated into Chinese spread, the Chinese monks obtained a better understanding of the diverse schools of doctrine into which Indian Buddhism had long been divided. Many of these schools were introduced into China and some developed new branches on purely Chinese initiative. Of these the most distinctive was the Ch'an, a Chinese name for the Indian Dhyana. The Ch'an School claim that their system was founded by the Indian monk Boddhidarma, who was living at Lo Yang between A.D. 516 and 534. It is, however, more than doubtful whether Boddhidarma, who is described in a contemporary account as a Persian, was in reality as important a person as the Ch'an believed. His life story, as preserved in Ch'an tradition, is almost wholly legendary, although some of the details, such as his miraculous passage of the Yangtze on a reed, have become

*This monastery is traditionally supposed to be Chi Ming Ssu, the "Cock Crow Monastery" which still exists, although the present buildings are of later date. It is on a hill overlooking the Hsuan Wu Lake, above the Academia Sinica. The palace of the Six Dynasties covered the area to the south of this hill

famous folk tales, and have inspired a long succession of artists.*

The Ch'an school laid the greatest stress upon contemplation as the only and essential road to enlightenment The duty of man was to discover, by contemplation, the germ of Buddhahood, which lies latent in every human being. As soon as this discovery is made, the enlightened one attains the status of a Buddha in this life, without needing a reincarnation. The school cared little for theology, and avoided written tracts, relying on the personal oral teaching of master and disciple. It was vigorously opposed by all the other schools, who regarded its tenets as heretical. Nevertheless, the Ch'an school flourished both in China and, later, in Japan.

There can be little doubt that, although certain Ch'an tenets were of Buddhist origin, much of the theory and practice of the sect came from Chinese Taoism Indeed, stripped of its Buddhist terminology, Ch'an seems to bear a very close resemblance to the Taoist teaching of Chuang Tzŭ and the *Tao Tê Ching*. Already, by the 6th century, the pervasive force of Chinese thought was colouring Indian Buddhism with a native hue, but Indian schools and sects continued to win converts and enjoy high favour at the Courts of the Buddhist Emperors of that period.

In A.D. 563 the Indian monk Paramartha introduced the only Hinayana school which flourished in China. This school, known in India as Sarvastivida, and in China as Chiu Shê Tsung, was conservative, clinging to the Hinayana doctrines which were regarded as the most authentic tradition of Gautama's teaching. Although this school made some appeal to scholars and intellectuals, it never captured the popular approval and died out in the 10th century, when the rise of what was in fact a new religion, Amidism, the worship of Amida Buddha, changed the whole character of Chinese Buddhism.

Towards the end of the period of partition Chih K'ai, a Chinese monk of the great monastery at T'ien T'ai, near Ning Po in Chekiang province, founded the purely Chinese school which is

*The question of Boddhidarma and his life has been elucidated by Prof. P. Pelliot *T'oung Pao*. Vol XXIII p. 253.

Ch'an Buddhism, introduced into Japan, has played an important part in that country, where it is known as the Zen School.

usually known as T'ien T'ai, and in Japanese Tendai. The tenets of this school clearly reflect its Chinese origin Chih K'ai tried to reconcile the diverse accounts of Buddha's teaching by a compromise which treated the texts as a series, each proper only to its context. Apparent contradictions could thus be explained by interpreting the text in accordance with the supposed occasion of its delivery and the matter with which it dealt. The teaching could be divided into an early and developed doctrine, which had gradually been expounded to the disciples as their enlightenment progressed It further reconciled the Mahayana theory of ultimate Buddhahood for true believers by teaching that every man had in him the capacity to attain Buddhahood if he nourished this side of his nature

The influence of Confucian ideas on the interpretation of difficult and inconvenient texts by some theory of the occasion on which they were uttered, is plain in the teaching of the T'ien T'ai school. Perhaps on account of its attitude of compromise, it made a wide appeal to the Chinese and became one of the most flourishing schools of Buddhism in the Far East. It was not until the 14th century, when Amidism had almost entirely replaced early Buddhism, that the T'ien T'ai school began to decline. Chih K'ai, its founder, an able and fluent writer, died in A.D. 597 shortly after the reunion of the empire under the Sui dynasty

Amidism, the ultimately dominant school of Buddhism, or rather the new religion which displaced the traditional Buddhism of the early period, was introduced into China during these centuries, but did not at first meet with much favour. It was not until the monk Kumarajiva translated the work known to the Chinese as the Amida Classic* that the new cult began to spread. Further works translated a few years later helped to popularise the Amida cult, which soon captured the imagination of the people, who found the obscure and transcendental philosophies of the other schools too difficult.

Amidism substitutes for the original, authentic Gautama, Amida, or Amitabha, a personage unknown to early Buddhist dogma. He is not a man, but a deity born of a lotus, in the

**A Mi To Ching*, in Sanskrit *Sukhavati-vyuha*.

marvellous paradise Sukhavati, which the Chinese call *Hsi T'ien*, the Western Heaven. The road to salvation is no longer the arduous life of abstention and contemplation which Gautama had preached To escape the torments of hell and be reborn in the Western Paradise it is only necessary to invoke the name of Amida. A higher ideal was indeed offered to those who found this simple rule of life too easy The new ideal was no longer Nirvana, the extinction of desire and the relief of all suffering, it was to become a Buddha by devoting the whole activity of terrestrial life to benevolence towards all men. Thus, Kuan Shih Yin or Kuan Yin, originally the Bodhisattva Avalokitesvara, became a goddess of mercy "who hears the cry of the world," as the Chinese name indicates She is the compassionate Bodhisattva who, when about to enter into Buddhahood, turned back to listen to the cry of suffering which rose up from the earth, and vowed to postpone her own eternal deification until every living creature had been raised in the scale of existence to her own sublime elevation

Three other major Bodhisattvas share the veneration paid to Kuan Yin, although their functions and characters are not very clearly differentiated from hers Ti Tsang (Kshitigarbha) is the divinity who, renouncing Buddhahood as Kuan Yin had done, devotes his existence to alleviating the suffering of souls condemned to pass æons in hell. The Buddhist doctrine does not admit of eternal punishment, but erring souls are condemned to suffer torments in hell for very long ages to expiate the crimes they commit on earth. Ti Tsang has power over Yen Wang, the King of Hell, and can deliver or mitigate the tortures of the damned Wên Shu (Manjusri) and P'u Hsien are associated in China with the sacred mountains Omei in Szechuan and Wu T'ai Shan in Shansi respectively They too are Bodhisattvas who renounced Buddhahood in order to assist imperfect mankind in the long ascent to divinity Maitreya, in Chinese Mi Lo Fo, often called the "laughing Buddha" is not strictly speaking either a Buddha or a Bodhisattva He is the Buddha to come, who will be reborn on earth for the last time as a Bodhisattva, who like Gautama will achieve the supreme height in that existence.

Amidism, in which the cult of these Bodhisattvas plays a conspicuous part, did not gain the ascendency it now enjoys until

several centuries after the period of partition, when it was first introduced into China. Constantly advancing in popular favour, it was at first disregarded in scholarly circles, and it was not until the 10th century, at the end of the T'ang dynasty, that the cult of Amida Buddha outstripped all others

The reunion of the north and south under the Sui dynasty in A.D. 589 and the consolidation of a second unified empire by the T'ang in A D 618 gave Buddhism a new impetus Although Confucian scholars attempted to enforce measures limiting the number of priests and monasteries, their efforts met with only fleeting success, and Buddhism flourishing under the patronage of the Court, became established as a national religion which continued to throw out vigorous new branches. The Sui sovereigns ordered the publication of three new editions of the *Tripitaka* in the short space of two decades. Early in the T'ang dynasty the celebrated pilgrim Yüan Chuang* set out on a voyage to India as famous as that of his predecessor Fa Hsien.

Starting from Ch'ang An, Yuan Chuang made his way across Turkestan to Samarkand. Most of these countries were still strongly Buddhist, as they had been two hundred years before in Fa Hsien's day. Yüan Chuang travelled into India by way of Afghanistan, where he found Buddhism flourishing. He visited Kashmir, and was hospitably entertained at the Court of the King. After a long stay in this country he went on to Central India, where he visited and described the Court of the great Hindu King, Harshavardhana or Siladitya, at Kanauj, not far from the modern Lucknow in the United Provinces. Siladitya had heard of the fame and glory of the great T'ang T'ai Tsung, the real founder of the T'ang dynasty, who was then on the throne. He treated Yüan Chuang with great consideration, and made many inquiries about China and its famous ruler. The pilgrim, who was a man of good family and personally acquainted with the Emperor, was able to answer these questions with many details.

*Also called Hsuan Tsang, and Hiuen Tsang in French works. Several translations of this work have been made in English and French T. Watters, *Yüan Chuang's Travels in India*, Royal Asiatic Society, London, 1904, is the most recent.

After an absence of sixteen years Yüan Chuang returned to China by the land route, bringing with him no less than 657 Indian texts, a number of images of the saints and Buddhas made of precious material and curious workmanship, and 150 "genuine" relics of the Buddha It is not often that one finds so well documented an account of the introduction of new artistic influences as this importation of Indian and Central Asiatic works of art Yüan Chuang also brought back to China the teaching of a new school, the Madhyamayana, which preached a subjective idealism. The ego alone is real, the universe, being the product of thought, is imaginary. This school had a certain success in the T'ang period, but died out under the constant pressure of the all-conquering Amidism

Yüan Chuang, who was received with great honours on his return, enjoyed the favour and friendship of the Emperor T'ai Tsung, and spent the rest of his days at the labour of translating the books he had brought from India, and in composing, at the Emperor's wish, a record of his travels He died, nineteen years after his return to China, in A D. 664.

The Hua Yen Tsung, another school which appealed to many Chinese by reason of its agreement with certain ideas already well known from Taoist writers, was propagated by the Chinese monk, Tu Shun, a contemporary of Yüan Chuang, though a much older man. He died at the age of 84, in A D 640 His school claimed to preach the higher and complete doctrine of Buddhism It accepted the Mahayanist belief in a multitude of Buddhas, past and future, and the doctrine, taken up by Amidism, that all may become Buddha in the course of time Its principal tenet, which agreed with Taoist philosophy, was the belief in an absolute unity transcending all divergencies, in which even contraries were seen to be but forms of the Primal One.

The speculative philosophy of these schools before long provoked a positive reaction among the practical minded Chinese Tao Hsüan, who died A D 667, was also a contemporary of Yuan Chuang He founded the Lu Tsung, a purely Chinese school which returned to the primitive Buddhist standpoint. Philosophic speculation was decried as contrary to the true teaching of Buddha Leaving theory aside, Tao Hsüan and his disciples concentrated

on the practice of benevolence The duty of the true Buddhist they declared, was to purify the heart, then the actions, to practise charity and to arrive at the profession of universal benevolence. These ideas bear a strong Confucian impress. On that account, perhaps, the Lu Tsung has always appealed to Chinese Buddhists and succeeded in resisting the influence of Amidism and maintaining itself to the present time. Its influence on morality and public conduct has been considerable and beneficent. With the decay of other schools under the influence of Amidism this doctrine gradually gathered to itself all the more intellectual elements of Chinese Buddhism.

In the next century, the last important addition to the schools of early Buddhism was made by two Indian monks, Vajrabodhi, a Brahman by caste, who worked between A D. 719-732 and his disciple Amogha, also a Brahman, who died in China in A.D. 774 These Indians were responsible for introducing Tantrism, the form of Buddhism which has conserved the greatest part of pre-Buddhistic Hinduism Strongly influenced by Yogi doctrine and the cult of Siva, the sect makes use of formulæ of magic power called in Hindi, *mantra,* in Chinese, *chên yen* "true words," and of the Yogi respiratory exercises which produce self hypnotism. It recognises a kind of trinity composed of Gautama Buddha, Amida, and Vairocana, who form a single Buddha. This sect also venerates Siva and his bride Vajrapati and numerous other Indian deities and demons. It has had a considerable influence, of an unfortunate kind, on Chinese superstition, and still flourishes In reality, Tantrism is only Buddhist in name, being a compound of Sivaism and other Hindu cults, with a flavour of Buddhism and a foundation of still more ancient animism. Amogha, who was mainly responsible for its success in China, made a voyage to Ceylon and India to obtain the books of his sect On his return he enjoyed high favour, was given titles and the rank of minister and spent his life in translating the books which he had brought from the west

By the end of the T'ang dynasty Buddhism, considerably modified by Chinese ideas and beliefs, had won a lasting place in Chinese culture, from which it has never been displaced Although constantly opposed by Confucian scholars such as Han

Yü (A.D. 768-824) in the T'ang period, and a long succession of men in later ages, the mass of the people accepted Buddhism after their fashion, and gave Buddha an equal place with the national sages and deities Although the Court favoured Buddhism, and largely endowed monasteries and temples, the Buddhist Church, perhaps on account of its own divisions and loose organisation never acquired political power and domination comparable to the Christian Churches in Europe. Even at the height of Buddhist fervour, the political power remained in the hands of laymen who were Confucian in training, even if Buddhist in sympathy and the practice of daily life.

PART FOUR—THE T'ANG EMPIRE

Chapter XIII

THE RESTORATION OF UNITY

THE consolidation of the T'ang dynasty, which succeeded the short-lived Sui, is a turning point in the history of China, marking the second foundation of a centralised empire of long duration. Chinese historians have been accustomed to divide the history of their country into dynastic periods, regarding the ruler who governed the largest domain as legitimate Emperor of all China, even when other princes had seized upon wide provinces. This treatment of Chinese history has usually been adopted, for convenience sake, by western writers, but it is apt to convey an erroneous idea of the development of the Chinese monarchy

As was mentioned in Chapter XI, the "dynasties" of the period of division which followed the downfall of the Han Empire were for the most part military dictatorships founded by usurpers who rarely governed more than a few provinces, and only transmitted their power to their immediate descendants. These rulers never enjoyed the authority and prestige which the Han Emperors had wielded, no enduring sentiment of loyalty to an established imperial house bound their subjects to them They resemble rather the dictators of the South American Republics or the Tuchuns of republican China, and to compare them on an equal footing with the long-established sovereigns of the Han and T'ang dynasties is to misconceive the character of the true dynasties founded by Liu Pang of the Han and Li Shih-min of the T'ang.

The fact that every ruler of part or of all China has assumed the title of Emperor, and the regime he set up—even when it endured for little more than a decade—has been treated as a dynasty, has obscured the history of the Chinese throne and led to the mistaken idea that in all ages the functions and authority of the Emperor were identical. An historian who argued that as Alfred and George the First were both Kings of England, therefore the English monarchy had remained an immutable institution for a thousand years, would be treated with contempt in the west, but an Asiatic unacquainted with European history might be deceived It is hardly less inaccurate to portray the Han, Liang,

T'ang and subsequent dynasties as an unchanging repetition of the same political system.

The second centralised empire founded in China, the T'ang, differed in many important respects from its predecessor, the Han. The difficulties under which the emperors of the Han dynasty laboured have been discussed in Chapters VII and XI: the compromise with a feudal system, which though dying, still had the support of influential classes; the constant struggle against the ambitions and usurpations of the consort families; the power of the palace eunuchs, which the emperors themselves fostered as a barrier to the ambitions of the consort families, but which in the end brought the dynasty to ruin. All these difficulties arose primarily from the lack of a sound moral title to the throne, which the Han dynasty, sprung from a soldier of fortune, did not enjoy. To the very end of the dynasty the imperial family were regarded as the posterity of an illiterate peasant adventurer, and as such, no better than their rivals.

The T'ang suffered from none of these disadvantages. In A.D. 617 the Sui dynasty, founded thirty-six years earlier by the Chinese general Yang Chien, who reunited the empire (A.D. 589), collapsed owing to the misgovernment of his son, Yang Ti. This second Emperor of the Sui was a megalomaniac who destroyed his father's work by excessive extravagance, unnecessary and unsuccessful wars with Korea, and tyrannous misgovernment. In the anarchy which broke out in protest against his misrule, the newly won unity of the empire disappeared, and would certainly have perished, perhaps for ever, had it not been for the genius of one man, Li Shih-min, the real founder of the T'ang. A long era of division and turmoil made the idea of reunion remote and almost unacceptable to the well-established sectional interests which had grown up under the partition.

The significance of Li Shih-min's work can be appreciated by a comparison between the course of European history and that of China after the Han Empire. In both regions the first centralised Empire which had embraced the civilised world collapsed under internal disorder and barbarian invasion. In both the fall of the empire was followed by four centuries of division and strife. In Europe Charlemagne revived, briefly, the fallen empire, and

for a time it seemed that the newly restored unity would survive. In China the same task was performed by the Sui dynasty. But whereas in Europe the Holy Roman Empire withered and became an empty name, covering an ever increasing separatism, in China the T'ang dynasty completed the work which the Sui had failed to maintain and made unity the enduring pattern of the Chinese political system

Li Shih-min, a youth of sixteen when the Sui power collapsed, was the son of a provincial governor, descended from an illustrious family of North China, which had intermarried with the Tartar aristocracy of the immigrant conquerors. Forcing his timid and hesitant father, Li Yüan, to revolt against the Sui, Li Shih-min in seven years of violent and intricate civil war destroyed his numerous competitors and reunited the whole of China, although his father exercised the titular sovereignty. After his own accession in A.D. 627 he repulsed and dispersed the Turkish hordes menacing the northern provinces, and during the twenty-two years of his reign reorganised the empire to which he had brought peace and unity. His work was so well done that he left an administration obedient to the throne and capable of withstanding many calamities.

The personality of Li Shih-min conferred upon his descendants a prestige which the Han sovereigns never acquired, and the high rank of his family contributed to give the Li a moral title to sovereignty which long outlasted the real power of the throne. The house was accepted from the first as worthy to rule, by virtue of intermarriage with two previous dynasties, the Sui and the Northern Chou,* and the importance of the official positions which members of the family had filled under the various dynasties ruling in the north. For these reasons they were acceptable to their former equals, the scholars and generals of the fallen Sui Empire.

It was the immense personal prestige of the founder, Li Shih-min, which secured to the T'ang dynasty a moral title to the

*The Li, and the imperial families of Sui and Northern Chou had all intermarried with the Tu Ku family, descended from Tartar invaders. The Li were directly descended from the sovereign Princes of West Liang, a small state founded in Kansu after the fall of the Tsin dynasty. They claimed to be the descendants of Li Kuang, a famous general of the Emperor Wu of the Han dynasty.

FIG. 46 *The Emperor T'ang T'ai Tsung After an engraved stele formerly at Chao Lin, Shensi.*

throne which remained unchallenged for generations. He had appeared as the man of destiny, to whom no task seemed impossible, the saviour of society, the restorer of unity and peace In China where the pen has always been held in higher honour than the sword, the merits of Li Shih-min as a scholar and administrator counted for as much as his prowess in war. The long peace which his conquests and administration secured fostered the arts and literature, for which this dynasty is famous. So dynamic was his personality that he inspired all who came into contact with him, and became a legend with posterity. He has had no equal on the throne of China.*

Li Shih-min (Fig. 46), known in history under the posthumous title T'ai Tsung, died in A D. 649, at the early age of forty-nine, but his work had been so well done that China enjoyed internal

*For an account of the life and times of Li Shih-min and the foundation of the T'ang Dynasty see C. P Fitzgerald, *Son of Heaven* Cambridge University Press, 1932

peace for more than a century after his death. This happy result was in part due to the singular fortune of the T'ang dynasty which was ruled in turn by two outstanding personalities, worthy to carry on the tradition of the great T'ai Tsung The Empress Wu, and her grandson the Emperor Ming Huang successively governed China in the age which the T'ang poets have immortalised. Orthodox Chinese historians, shocked at the spectacle of a woman openly governing the empire in contravention of all the Confucian theories of sovereignty, have not done justice to the Empress Wu, and, since they cannot deny the excellence of her administration, have concentrated their criticisms on her private life, which was not beyond reproach.

The career of this famous woman well illustrates the new prestige which surrounded the imperial throne, and marks the essential difference between the character of the monarchy in the Han and T'ang eras. Wu Chao entered the palace at the age of twelve in A D. 637 as concubine to T'ai Tsung At the Emperor's death, in accordance with custom, she, together with all the concubines of the deceased ruler, entered a Buddhist convent, where with shaven head she was expected to pass the rest of her life. Wu Chao was too intelligent and too beautiful to accept this fate. Profiting by the visit of ceremony which the new Emperor Kao Tsung paid to the convent, she won his heart, and achieved the unprecedented fortune of escaping from this living death, and returning to the palace as concubine of Kao Tsung, to become in time his full consort and acknowledged Empress

Kao Tsung was good-natured, but lazy and weak He soon resigned the entire direction of affairs to his consort, who wielded undisputed power throughout his long reign (A.D. 649-683) After his death she openly assumed the sovereignty during the purely nominal reign of her son, the Emperor Chung Tsung. It was not until A.D. 705, when old and ailing, that the famous Empress was compelled to resign her power in his favour and pass the last months of her life in that retirement to which the laws would have condemned her fully fifty years earlier. She died in the same year at the great age of eighty-one.

The Han dynasty had offered only too many examples of an ambitious Empress seizing the authority of a weak Emperor, but

the career of the Empress Wu is notable for the very different consequences which followed. Never, in all her long rule, did she entrust the administration to her own relatives, and, although she flirted with the idea of transmitting the throne to her own family, she found that the formidable opposition which the plan aroused made the execution of this design impossible. As consort of the Emperor, or as Empress Dowager, the official world willingly consented to her usurped authority, recognising her great qualities and the incapacity of the rightful prince, but her most devoted ministers were unalterably opposed to any attempt to transfer the throne to her own family. Considering the long duration of her undivided power this fact is a most striking testimony to the immense prestige which Li Shih-min had transmitted to his posterity.

Chung Tsung (A.D. 683-710), her son, was an incapable ruler who had passed the greater part of his life as an impotent state prisoner. Suddenly restored to the real authority he proved quite unfitted to bear his new responsibilities. During the five years that followed the death of the Empress Wu the Court was convulsed by the intrigues of the ladies of the palace and the princes of the imperial family who endeavoured in turn to dominate the Emperor. Fortunately this dangerous interval did not endure long enough to impair the administration of the provinces, which remained tranquil and obedient under the efficient officers appointed by the Empress Wu. In A.D. 710 the Emperor was poisoned by his consort, who hoped to occupy the place left vacant by the Empress Wu.

This design was frustrated by the emergence of the third great personality of the early T'ang period, Li Lung-chi, who later reigned as the Emperor Ming Huang, posthumously known as Hsüan Tsung. Li Lung-chi was the nephew of Chung Tsung, and grandson of the Empress Wu by her second son, Li Tan Seizing the palace by a *coup d'état*, he made his father Emperor, and on his abdication two years later ascended the throne himself. His long reign (A.D 712-756) secured the empire another forty years of peace, a celebrated half-century enriched by the lives of the greatest Chinese poets and famous artists who received the patronage of this cultivated ruler.

The reign of Ming Huang would be without question one of the most glorious in Chinese history had it not been darkened at the end by the great rebellion of the Tartar general, An Lu-shan, which ended the long internal peace of 132 years and wrecked the administrative machine of the T'ang Empire. In poetry and drama Ming Huang has been immortalised not for his long and successful rule of forty-four years, but for the romance of his love for the beautiful Yang Kuei Fei, his concubine, which was the prelude to the rebellion of An Lu-shan. This story, however, regarded in its historical as opposed to its romantic aspects, bears a somewhat different interpretation. Yang Kuei Fei may have been as beautiful as the poets would have us believe, but the Emperor himself was a man of seventy-two when he was forced to sacrifice his favourite to the fury of the soldiers. This fact, though it diminishes the romantic quality of the story, does much to explain the political catastrophe of which this infatuation was one of the causes.

The true story of the romance of Ming Huang and Yang Kuei Fei, the facts of history, are not very edifying In A D. 745, the Emperor, then over sixty, was attracted by the beauty of the wife of his son, Prince Shou. He forced the Prince to divorce his wife, gave him another bride in compensation, and took the famous Yang Kuei Fei into his own harem. Yang Kuei Fei soon managed to acquire a complete domination over her aged consort. It was through her influence that An Lu-shan rose to the highest favour and obtained the power to organise his terrible revolt.

An Lu-shan was a Turk of the Kitan tribe, of very obscure origin, born beyond the Wall in the country of Liao Tung (South Manchuria). At an early age he was captured or sold as a slave to a Chinese officer in a northern garrison. Showing some ability in war he was promoted in time to the rank of officer, and finally became a general. Grossly fat, with a simple ingenuous manner which concealed a shrewd cunning, he ingratiated himself by flattering the Emperor and amusing him with clumsy gaffs and clownery. His pretence of simple uncouth barbarism, and ignorance of etiquette became one of the standing jokes of the gay Court, particularly amusing to the favourite, Yang Kuei Fei. She took An Lu-shan under her protection, and even adopted

him as her son The Emperor, who regarded the Turk as a good-natured buffoon, accorded him high favours to please his mistress An Lu-shan was allowed to visit the concubine in the inner palace, an unheard of privilege, and even took part in private dinner parties at which only the Emperor and Yang Kuei Fei were present. At gay fêtes and festivals the uncouth general submitted to ridiculous and even indecent practical jokes at the hands of the ladies of the palace The Emperor, completely under the sway of Yang Kuei Fei, made no objection, and, indeed, was highly amused. Even the spread of scandalous rumours connecting the general and Yang Kuei Fei left him unmoved.

An Lu-shan, for his part, obtained increased honours He was made governor of the frontier province of Liao Tung, in charge of the best troops in the empire. In A.D. 750 he was made a second-class Prince, although this title was reserved by law for members of the imperial family. Meanwhile the concubine's brother Yang Kuo-chung had become first minister of the empire, ousting his predecessor through the influence of his sister. He now became jealous of the power of An Lu-shan, and, perhaps genuinely, declared that he suspected the Turk of intending to revolt. The Emperor treated such insinuations as nonsense, and, when the minister and even the Crown Prince insisted, he summoned An Lu-shan to Court, the surest way of putting his loyalty to the test The Turk, whose preparations were incomplete, promptly obeyed, and, with tears, protested his loyalty at the Emperor's feet, repudiating the calumnies of his enemies. The Emperor, completely convinced, restored him to his high command with fresh honours (A.D. 752). Henceforward no representations, however urgent, however well supported with proofs, could shake his faith in Yang Kuei Fei's hideous adopted son.

Three years later, when the Court was least prepared for it, An Lu-shan threw off the mask. His success was immediate The best troops of the empire were under his command, the other garrisons far distant Marching from his base, the site of modern Peking, the rebel crossed the Yellow River, captured Lo Yang, the second capital of the empire, and, after defeating the army which the Emperor had hastily gathered against him at Ling Pao, captured the T'ung Kuan Pass and pressed straight on to the

capital The Court, distrusting the possibility of defending the enormous city with inadequate and unwarlike troops, fled precipitately towards Szechuan An Lu-shan entered Ch'ang An unopposed.

When the imperial party, which had escaped too hastily to take provisions for the journey, reached the small post of Ma Wei, in west Shensi, the soldiers, hungry and dispirited, broke out in sudden mutiny. The minister, Yang Kuo-chung, was the first object of their rage. Seeing him in conversation with the Tibetan ambassador, or according to another account, addressing a party of Tibetan mercenaries, they raised the cry that he was betraying the state to the foreigners Forthwith the infuriated mob set upon the minister and murdered him. The Emperor, alarmed by the tumult, attempted to calm the soldiers, but instead they cried insistently for the head of Yang Kuei Fei, sister of the hated minister, and patron of An Lu-shan. At last, when convinced by his terrified Court that nothing else could appease the turmoil, and that any refusal would cost him his own life, Ming Huang gave the order. Yang Kuei Fei was conducted by the chief eunuch to the pagoda in the village, and there strangled. This is the "everlasting wrong," the subject made famous by the poem of Po Chu-i, and countless tales and stage plays

The rebellion of An Lu-shan made little progress after the fall of Ch'ang An. The Emperor, a broken man, fled to Szechuan and abdicated in favour of the Crown Prince The new Emperor, Su Tsung, rallied the people of the north-west and obtained valuable aid from the foreign nations friendly to China. With a mixed army of Central Asiatics, Chinese, Turks, and even Arabs sent by the Caliph, the imperial commander-in-chief, Kuo Tzŭ-i, a man of great ability and unfailing loyalty, gradually obtained the ascendant. The war dragged on for ten years, even after An Lu-shan and his son had both been assassinated and replaced by other pretenders Peace was finally restored in A D. 766, but the empire had suffered irreparable harm from the war.

The actual loss of life is certainly exaggerated in the official histories, as will be shown in the next Chapter. The real damage done by the great rebellion was not so much to the population or even to the wealth of the north, but to the integrity of the admin-

istrative machine of the T'ang Empire and the strength of the state. It is certain that after the war the imperial throne never recovered the same authority over the provincial governors as it had exercised in the first 130 years of the dynasty A full century was to pass before the T'ang Empire entered upon its final agony, but in this second T'ang period there is a marked change in the character of the government. Thanks to the established prestige of the imperial family, An Lu-shan and his followers were finally crushed, the Emperor returned to Ch'ang An, and peace was restored. Unfortunately, this result had only been obtained by giving the generals in charge of the war the fullest powers in the rebel provinces, and, after the end of the campaign, these powers could not easily or safely be withdrawn

During the century between A.D. 766, when peace was established, and A D. 868, when the empire entered into a period of intense strife, the prelude to its collapse, the Court was constantly contending against two besetting evils, hitherto unknown. On the one hand the empire suffered from the raids and invasions of its western neighbours, the Tibetans, and, on the other, the Court was frequently in conflict with powerful provincial governors, who, not content with exercising an absolute sway over their provinces, strove to transmit their power to their sons.

Both these dangers were the dragon's teeth sown by An Lu-shan's rebellion, for the regular army, which that rebel had led into revolt, was now destroyed The frontiers were exposed to the barbarians, and the provincial armies, obeying their governors rather than the Court, could not be effectively controlled by the government It was particularly in the eastern provinces which had been the seat of the great rebellion, and which had subsequently been handed over to the generals charged with suppressing it, that the new spirit of insubordination was most prevalent. The Court was compelled, for the sake of peace, to tolerate the great power of these viceroys, but it firmly opposed their efforts to make the succession to the viceroyalty hereditary.

The conflict between the policy of the Court, ever seeking to restore the central authority which it had formerly exercised, and the separatist tendencies of the eastern viceroys led to several

insurrections, one of which, from A D 809-822, seriously menaced the throne, though for the most part they were local in their effects and soon appeased. These revolts were all confined to the eastern provinces, Shantung, Honan, and Hopei, while the Yangtze basin and southern provinces continued to enjoy the profound peace which had not been interrupted in those regions since the foundation of the dynasty. The long peace in the south had far-reaching consequences, for it was now that on this account the centre of gravity in the Chinese Empire slowly shifted from the ancient cultural centres in the north and west, too often disturbed by wars, to the fertile southern valleys which were becoming increasingly populous The T'ang dynasty is the last era of the greatness of the north-western provinces, the famous "land within the passes" which had been the cradle of the centralised empire The rise of the south truly dates from this period, and it is not surprising that the Cantonese to this day use the expression *T'ang jên*, "man of T'ang," to denote the Chinese race, whereas in other parts of China the old term *Han jên*, "man of Han," is still used

The second difficulty against which the emperors of the later T'ang period had to contend was the sustained hostility of the Tibetans, their western neighbours. It is noteworthy that during this century the northern borders, which in other ages had been subject to the raids of the nomads of the steppes, were very little troubled. The break up of the Turkish hordes which had followed the conquests of Li Shih-min had left lasting divisions among the nomads, and no formidable united power developed in the Mongolian steppes until the very end of the dynasty. The new enemies came from the west. The Tibetan tribes had coalesced into a strong kingdom in the early years of the T'ang Empire, and during the reign of Ming Huang there had been several clashes with their warlike kings After the rebellion of An Lu-shan had weakened the frontier defence, the Tibetans invaded in great strength and actually captured and sacked Ch'ang An in A D. 763, when the city had only recently been recaptured from the rebels.

During the second half of the 8th century and the first half of the 9th, the new western power made constant encroachments upon the Chinese border provinces until most of western Kansu,

large parts of western Szechuan, and all the Central Asian territories which Li Shih-min had added to the empire, fell into their hands The wars with these uneasy neighbours continued intermittently throughout this period, mostly to the disadvantage of the Chinese, until Tibetan expansion was brought to an end in A.D 849 by the troubles which followed upon the extinction of their line of native kings The Chinese were then able to recover their lost territories without much difficulty; but the long drain on the enfeebled resources of the Court was a contributing cause to the decline of the empire.

The Tibetans were not the only western enemies of the T'ang Empire. In the extreme south-west of what is now China, but was then outside the empire, the province of Yunnan, a warlike kingdom had come into being. Nan Chao, as this state was called, occupied the high plateaux of Yunnan and part of Kueichou, and throughout the last two centuries of the T'ang dynasty it opposed a powerful check to the advance of the Chinese in these provinces. The kingdom of Nan Chao in the T'ang period has the distinction of being the only example of prolonged and successful resistance organised by the aborigines of the south-west during their secular struggle with the invading Chinese.

In spite of the border wars with Tibet and Yunnan and the occasional revolts of the north-eastern viceroys, the period from A.D. 766 to A.D. 868 was one of relative peace and prosperity, particularly in the south. It was only gradually that the Court lost its power over the provinces Had the dynasty been fortunate enough to produce a ruler of dominant character who could have reigned long enough to enforce a real reorganisation of the administration, the T'ang Empire might have recovered its strength in the later 9th century, when Tibetan aggression had ceased.

Unfortunately, although several of the later emperors were capable men, none had the fortune to reign for any length of time. Only one Emperor of the later T'ang period, Tê Tsung (A.D 779-805), reigned for twenty years, and many of his successors were less than a decade on the throne. These frequent changes of reign prevented any ruler acquiring the experience and personal authority to dominate the great governors and reduce them to a proper obedience. A new Emperor, fearful of revolt, found it

easier to confirm the existing viceroys in their positions in return for their allegiance. The great weakness of the Court was therefore due to the feeble health of the later T'ang Emperors, few of whom lived to be fifty, while many died well before reaching middle age

In contrast to the last years of the Han dynasty, the T'ang Court was in the main free from the twin evils of eunuch domination and feminine intrigue. Not one of the later T'ang Empresses attempted to imitate the Empress Wu, or to elevate her own family at the expense of the reigning dynasty This shows clearly the immense prestige which still attached to the royal blood of the Li clan The eunuchs, though they gained in influence as the dynasty declined, never obtained the fatal ascendancy which had brought the Han dynasty to ruin In the reign of Wên Tsung (A D. 826-840) they did indeed endeavour to concentrate the power of the Court in their own hands, but the successors of Wên Tsung had the strength to oppose their plans and confine them to functions more proper to their condition.

The real reason why the eunuchs of the T'ang Court failed to acquire great power was less the opposition of the emperors than the condition of the provinces. As the 9th century wore on the viceroys became more powerful and less easily displaced by the authority of the Court. They still affected the manners of subjects, and paid respect to the Emperor, but the administration became more and more decentralised. The Court having less influence on the appointment of provincial officials, aspirants for a provincial post were not induced to flatter the eunuchs, even when they had great influence with the Emperor The provincial officials were dependent upon the favour of the viceroys, and the eunuchs had little outside scope for the power they acquired at Court.

Up till the later years of the 9th century the T'ang Empire, though weakened by the consequences of An Lu-shan's rebellion, had preserved the unity of China and internal peace, more especially in the south, where for nearly 250 years the tranquillity established by Li Shih-min had remained undisturbed There have been few periods in the history of the world when so large and so civilised an area has remained unafflicted by war for more than two centuries. However, the peace of the south and the stability of the T'ang Empire as a whole were both destroyed by

the second great rebellion which finally shattered the power of the dynasty.

In A D. 868 the army stationed on the Annam border to repel the incursions of the King of Nan Chao, mutinied in protest against its long sojourn in unhealthy country with little or no pay The mutineers were northern troops, from the region of Kiangsu north of the Yangtze, for the inhabitants of the southern provinces had long lost the habit of arms The rebel army, homesick for the north, marched back, looting all cities which refused to pay ransom. The Court, at first ignoring the danger, only sent troops to check them when the rebels had already crossed the Yangtze, and, having arrived in their homeland, found plenty of malcontents to swell their ranks.

The dilatory behaviour of the imperial generals, who were divided by jealousies, permitted the war to drag on in the eastern provinces for some years until a leader arose among the rebels, who suddenly took the offensive and swept victoriously over the country. Huang Tsao was an educated man who had failed to pass the examination for the civil service In the ranks of rebellion he proved more successful In A D. 875 the rebels led by Huang Tsao invaded Honan, and moving south, over-ran Hupei, crossed the Yangtze, and penetrated through Kiangsi and Fukien to Canton, which they captured in A D. 879. Throughout this invasion of the south they met with no effective opposition, for the Court, indifferent to a danger which appeared to be remote, retained the best troops in the north

The climate of Kuangtung proved unhealthy for Huang Tsao's northern soldiers; decimated by disease they turned north and marched through Hunan to the Yangtze, but, after crossing the river, were severely defeated in Hupei. Had the imperial generals pursued the rebel army, Huang Tsao and his following would have been destroyed, but the indifference of the Court and the jealousies of the generals, who were more eager to obtain a rich province for themselves than to fight the enemy, prevented any concerted action, and permitted Huang Tsao to escape down the Yangtze and reorganise his forces. In A D. 880 he passed the river again, and, moving through Anhui and Honan, approached the Court with great rapidity. The key to Shensi, T'ung Kuan, fell

into his hands, and the rebel army advanced on the capital unopposed. In A.D 881 Ch'ang An fell, and the Emperor, like Ming Huang, his predecessor, fled to Chêng Tu in Szechuan.

The fall of Ch'ang An in A.D. 881 was the real end of the T'ang Empire Although the dynasty maintained a nominal existence for another twenty-seven years, the Emperor became the plaything of rival military leaders and provincial governors, who made war upon each other and divided up the empire between them. Huang Tsao's rebellion was put down, and the leader perished in A D. 884; but, although the Emperor returned to ruined Ch'ang An, the wars between the viceroys continued incessantly. All the evils which had followed the rebellion of An Lu-shan were multiplied after that of Huang Tsao. Hardly any province in the empire, except Szechuan, had escaped the rebel invasion, and the generals who reconquered them ruled in their territories as masters, paying a purely nominal respect to the shadow Emperor.

In A D 904 Ch'ang An was totally ruined and depopulated by Chu Wên, one of these governors, who had originally been a rebel general under Huang Tsao He carried off the Emperor to his own headquarters in Honan, where, in A D. 907, he forced the last T'ang Emperor to sign a deed of abdication in his favour. Chu Wên's usurped sovereignty was repudiated by the other viceroys, who one and all set themselves up as full sovereigns in their provinces and mostly claimed the imperial title. With the division of China into eleven states the second centralised empire came to an end.

Chapter XIV

SOCIAL AND ECONOMIC CONDITIONS

THE T'ang period is well known as one of the great creative epochs in the history of Chinese civilisation The poetry of this age has never been surpassed, and in the arts the work of the T'ang masters, particularly the sculptors and painters, stands on a par with anything produced before or since T'ang art and poetry are becoming increasingly known to the West through the work of collectors and translators, but as yet little has been done to illuminate the social background against which the artists and poets passed their lives.

Fortunately the highly organised civil service of the T'ang Empire has left records, which, incorporated in the official history of the dynasty, provide valuable information on social and economic conditions in the 7th and 8th centuries, when the empire was at the height of its material prosperity. These two centuries, the greater part of which were peaceful, were also the years in which the most famous T'ang poets lived and in which new artistic influences took shape.

The empire founded and stabilised by the great T'ai Tsung was the largest and almost certainly the most populous state in the world at that date. It was governed from Ch'ang An by a civil service, which, though based on the Han model, was both more effective and more powerful than its prototype The T'ang Emperors had no need to disguise their rule under a façade of feudalism. The empire was theirs to govern as they chose, no tributary or vassal kings rivalled their authority, no feudal lords could organise opposition in distant provinces Until the rebellion of An Lu-shan (A.D. 755) weakened the imperial authority and diminished the prestige of the throne, the whole empire was under the direct control of the central government, administered by a hierarchy of officials chosen by public examinations.

At its greatest extent, as left by T'ai Tsung at his death, the empire measured from north to south 16,918 li, and from east to west 9,511 li.*

* *T'ang Shu* The official history of the dynasty, published in the Sung dynasty All data in this Chapter are from this source.

Taking the Chinese li to be equivalent to one-third of an English mile, the distance from the northern outposts beyond the Great Wall to the borders of Annam was 5,640 miles, and from the borders of Tibet to the Pacific Coast, 3,170 miles. As these figures are considerably in excess of the actual distance from the northern point of the Great Wall to the southern border of Annam, and from Tibet to the sea, they are probably intended to include all the Mongolian tribes who had acknowledged the suzerainty of China in the north, and also all the Central Asiatic kingdoms over which Ch'ang An claimed overlordship Actually, the T'ang Empire did not include the greater part of the modern provinces of Yunnan and Kueichou, in the south-west, which were still inhabited by aboriginal tribes, usually very hostile to the Chinese. It was therefore somewhat smaller than the territory of the Republic to-day and considerably less than the area of the Manchu Empire

Under the early central empire of the Ch'in and Han dynasties the largest administrative unit in the provinces had been a prefecture, corresponding to the *chou* or medium sized district of the Manchu dynasty. There were no provinces under the Han dynasty. The first division of China into provinces, as opposed to feudal kingdoms and states, was one of the reforms of T'ai Tsung. By his orders China was divided into ten provinces, called *tao*, or circuits, which were arranged in accordance with the natural divisions of the empire, ignoring earlier political boundaries (Map 8).

The first, Kuan Nei—a name which is a synonym for the older Kuan Chung, the "Land within the Passes"—corresponded to the modern province of Shensi In it was situated Ch'ang An, capital of the empire To the north-west of the metropolitan province was Lung Yu, broadly equivalent to the modern Kansu, bordered on the west by the mountain land of the Tu-yu-hun nomads, the country now called Kokonor. Through this province ran the great road to the west via the oases of Central Asia. Ho Tung, "East of the River" was the T'ang name for the present day Shansi, a plateau country clearly defined by the Yellow River on the west and south, and the T'ai Hang mountains to the east.

The great eastern plain was divided by T'ai Tsung into three

provinces, Ho Pei "North of the River"—a name which the Republic has recently revived—covered the lands north of the Yellow River, the province called Chihli under the Manchu dynasty.

MAP 8. *The T'ang Empire.*

Ho Nan in T'ang times included not only the modern province of that name, but also the part of Shantung which lies south of the Yellow River. Huai Nan "South of the Huai (river)" covered

all the territory between the Yangtze and Huai rivers which is now divided between the provinces of Honan, Anhui and Kiangsu In this instance the T'ang division was both more logical and more convenient than the modern distribution, which runs across the topographical and economic boundaries of this area.

Under the T'ang dynasty the whole of southern China, including the Yangtze Valley, was divided into only four provinces. This region, equivalent to half the territory of the modern republic, is now covered by nine provinces, and the wide extent of the T'ang provinces is explained by the undeveloped and uninhabited state of much of south China in the 7th century. The four T'ang southern provinces were:

(1) Chien Nan, "South of the Gorges," comprising western Szechuan with parts of Yunnan and Kueichou up to the border of Tibet.

(2) Shan Nan, "South of the Mountains" covered the middle part of the Yangtze basin, to-day divided between eastern Szechuan, Hupei and northern Hunan

(3) Kiang Nan, "South of the River" included all the vast region now divided between Chekiang, Kiangsi and Fukien with parts of Hunan, Kiangsu and Anhui.

(4) Finally, Ling Nan, "South of the Range" corresponded to modern Kuangtung and Kuangsi provinces with part of Annam.

For the purposes of land revenue the T'ang government conducted several censuses of the population of the empire, and these figures have fortunately been preserved. A fragment of a census return, probably relating to the census of A.D. 740*, has been found among the MSS. recovered from the cave temples at Tun Huang, Kansu province. This return concerns a family of farmers settled in the district and records the numbers and sex of all members of the household, adults and children. It is therefore evident that T'ang statistics were not compiled with only taxpayers in mind, but represent a real count of the actual popula-

* *The Census of China During the Period A D 2-742* H Bielenstein, B M F E A., No 19 Stockholm, 1947

CENSUSES OF THE SUI AND T'ANG DYNASTIES

Date	*Families*	*Persons.*	*Prefectures*	*Sub-Prefectures.*
Sui				
A.D. 609	8,907,536	46,019,956	190	1255
T'ang				
A D. 640	No data	No data	358	1551
A D. 726	7,069,565	41,419,712	No data	No data
A.D 740	8,412,871	48,143,609	328	1573
A D 754	9,069,154	52,880,488	321	1538 Also 16,829 villages
After the Rebellion of An Lu-shan				
A D 764	2,900,000	16,900,000	No data	No data
A D 780	3,080,000*	No data	No data	No data
A D 839	4,996,752	No data	No data	No data
A D. 845	4,955,151	No data	No data	No data

tion, reflecting a degree of organisation and efficiency in the working of the civil service never equalled elsewhere until modern times.

It will be observed from these figures that during the 150 years preceding the rebellion of An Lu-shan the taxpaying population was between eight and nine million families, which were calculated to amount to between forty and fifty million persons. The cities, or rather the number of administrative divisions, which as a rule corresponds closely to the number of walled cities, varies somewhat, perhaps on account of administrative changes rather than the destruction or building of towns After the rebellion of An Lu-shan a catastrophic change is evident, not only do the figures show a huge decline in the population, but also the figures themselves are meagre and obviously only approximate It has always been argued that this change reveals the damage done by the rebels, a slaughter of more than 35,000,000 people. Such an interpretation is quite incredible

*Definitely stated to be taxpaying families only.

The rebellion of An Lu-shan has been represented as a devastating storm which swept away all the culture of the great 7th and 8th centuries, and left the T'ang dynasty a mere empty name and China depopulated. This is part of the poetic exaggeration which is permissible in the romantic stories about Ming Huang and Yang Kuei Fei, but unforgivable in history An Lu-shan's army and that of the imperial generals opposed to him did indeed devastate the northern provinces and wreck Ch'ang An, the capital, but it is often forgotten that the rebels never penetrated the southern provinces of the Yangtze basin and the south-east coast, nor even the rich western province of Szechuan, to which Ming Huang retired at the fall of the capital.

After capturing Ch'ang An the rebels made no further progress, and the rest of the long-drawn-out war was confined to the eastern provinces of Honan, Shantung and Hopei. At this period the southern provinces, which escaped the horrors of war, were already as rich and civilised as the older centres in the north, for ever since the partition in the Tsin dynasty, when many hundreds of educated and official families fled before the Tartar invasions, these provinces had rivalled the north in wealth and culture It is no accident that so many of the famous T'ang poets such as Li Po were natives of Szechuan or the Yangtze Valley.

The theory that China was depopulated and ruined by this war is based on the census figures of A.D. 754, the year before the revolt, and those taken in A D. 764, the year after peace had been restored In the first year the population of the empire is given as 52,880,488 persons and in A D. 764 no more than 16,900,000

If these figures are taken as an exact record of the full number of the inhabitants of the empire at these two dates it must be admitted that An Lu-shan, his successors in revolt, and the imperial generals, were responsible between them for the extermination of 35,000,000 people, and this vast slaughter was accomplished in the space of ten years, and confined to three or four provinces only. Wars in 8th century China, even when accompanied by sacks and massacres, were fought in a desultory fashion, with long intervals when the armies were in winter quarters, and their encounters were only occasional pitched battles Yet if these

figures are admitted this war accounted for a slaughter several times greater than that of the two great wars of 1914-18 and 1939-45, in which six great empires, all as populous as 8th century China, were continuously engaged with every device of scientific destruction Such an inference is fantastic.

It is more probable that after the confusion and disorganisation of the great rebellion the census of A.D. 764 represents no more than a rough estimate of the number of persons who could be made subject to taxation. These would naturally have greatly diminished after the devastation of the provinces which, being nearest the capital, were no doubt those in which the register had been most carefully compiled. Unless this explanation is correct it is impossible to reconcile the reported enormous shrinkage in the population with the known fact that many of the most wealthy and populous provinces in the empire were left untouched by the war

Even in north China there is little in the recorded history of the war to explain this tremendous loss of life. An Lu-shan, whose rebellion came as a surprise to the Court, advanced almost unopposed until he reached Ling Pao in Honan There a decisive battle was fought, as a result of which the rebel captured the T'ung Kuan Pass and advanced straight upon the capital. The later phases of the war, after the rebels had been forced back to Honan and Shantung, were long drawn out and probably very destructive to commerce and wealth, but they do not seem to have been accompanied by wholesale massacres. The experiences of these same provinces in the last thirty years prove that the depopulation caused by frequent and prolonged civil wars (fought moreover with modern firearms) is easily exaggerated. A census of the wealthy taken in 1920 and repeated in 1948 would no doubt reveal an even more staggering decline It is a matter of common observation that the actual population of this afflicted area has not sensibly declined, if it has not actually increased There seems to be every reason to believe that the war against An Lu-shan and his followers was of a similar character.

The real cause of the decline in the figures for the censuses after the rebellion was the dispersion of the officials who had been in charge of the revenue department. The provinces freed from the rebels remained under military rule, and the working of the civil

government was permanently impaired. The shrunken and admittedly approximate figures for the later years of the T'ang dynasty reflect the decline in the power and efficiency of the government rather than the ravages caused by the rebellion itself.

The social system of China under the T'ang dynasty, though no longer feudal, remained aristocratic. At the top of the social scale a large privileged class of nobles and officials, immune from taxation, provided the government with loyal servants whose interests coincided with that of the imperial family itself. Nine grades of nobility existed, but this nobility was no longer settled on the land, but supported by a charge on the taxes proportionate to the rank held (see Table) The three superior grades, Princes of the blood, second-class Princes, and first-class Dukes, were confined to members of the imperial clan, the first grade being the sons and brothers of emperors reigning or recently deceased, the second and third grades comprising the more distant descendants and collateral branches.

THE T'ANG NOBILITY

Rank	*Emolument.*
1st Class Prince (*wang*)	Taxes of 10,000 families
2nd Class Prince	,, 5,000 ,,
1st Class Duke (*kung*)	,, 3,000 ,,
2nd Class Duke	,, 2,000 ,,
3rd Class Duke	,, 1,000 ,,
Marquis (*hou*)	,, 1,000 ,,
Count (*po*)	,, 700 ,,
Viscount (*tzu*)	,, 500 ,,
Baron (*nan*)..	,, 300 ,,

The lesser ranks were recruited from eminent officials who had rendered conspicuous services at the foundation of the dynasty, or on subsequent occasions. Each nobleman was supported by the taxes of some thousands or hundreds of families proportionate to his rank Hereditary titles did not in themselves confer any administrative power, but each grade of the aristocracy had a corre-

sponding grade in the official hierarchy, which was also organised in nine degrees, each divided into a senior and junior division.

The civil service itself was confined to persons of education, chosen by a rudimentary form of the public examination system which later dynasties developed more completely. T'ai Tsung was responsible for this very important innovation, which gradually substituted a caste of scholars for the men chosen by favour or nepotism who had formed the official class under the Han and subsequent dynasties The Imperial College at Ch'ang An, which this Emperor greatly enlarged and upon which he bestowed many favours, was the training ground for the new civil service. After T'ai Tsung had added to it, no less than 3,260 scholars were enrolled as residents, while the total attendance including those who lived elsewhere was 8,000. The education provided was entirely confined to the Confucian classics and their commentaries, which were regarded as the best possible training for those embracing an official career

The whole body of this official class, the princes of the blood, nobility, families of imperial concubines and consorts, the superior grades of the official hierarchy, and the scholars of the imperial college, were exempt from the land revenue tax. Allowing for the laxity and corruption which would certainly exist, a very large number of people must have benefited by this coveted privilege

Nevertheless the government machine, until it was dislocated by rebellion and military usurpations, was highly organised and reasonably efficient. The whole administration was centralised in Ch'ang An, for, although T'ai Tsung had divided the empire into ten provinces, these were only employed as convenient groupings of the lesser administrative unit, the *chou* or prefecture, which was directly answerable to the ministries in the capital. The government itself was organised on a pattern which, familiar enough in modern times, was perhaps at that time the most advanced type of centralised administration ever attempted.

The Emperor was advised by a council, called the Shang Shu Shêng, consisting of certain high Court officials and the ministers of the six departments of government. These constituted the Li Pu or Ministry of the Civil Service, in charge of the official hierarchy, supervising the administrative machine. The Hu Pu,

literally "Family Ministry," which was the Finance and Revenue department, had under its care the collection of taxes, the taking of censuses and the agrarian system on which revenue was based A most important function of this ministry was the maintenance of the grain transport to the capital, on which the government depended for all expenditure on the army and civil service. The Li Pu (written with a different character to the first mentioned) was the Ministry of Rites, in charge of the public cult and observances of the state religion. The Ping Pu was the Ministry of Defence, controlling the army and the garrisons on the frontiers The Hsing Pu, Ministry of Punishments, was in control of the law courts administering penal law, for civil disputes were settled by custom and arbitration, not forming part of the official legal system. The judiciary was thus merely a function of the executive. The Kung Pu, Ministry of Works, was charged with the public works of the empire; dykes, roads, flood prevention and irrigation schemes.

These six ministries transmitted orders and received reports direct from the prefectures The prefectures were in charge of a varying number of sub-prefectures (*hsien*) and the magistrate of a sub-prefecture had direct authority over the villages in his territory. His functions, and those of the government as a whole, were three; the collection of revenue, supervision of public works, and the maintenance of the peace, including the administration of the penal laws Five degrees of punishment were recognised by the official code, and, although T'ai Tsung had greatly modified the severity of the laws enacted by the Sui dynasty, the penal code was still very severe.

The lightest punishment was flogging, divided into two degrees, the heavier sentence not infrequently proving fatal to the victim For more serious offences the punishment was banishment, also divided into two degrees. The lesser, for not more than three years to another part of the offenders' native province, the heavier, for life to the frontiers of the empire. These latter life exiles were employed as soldiers on the Great Wall, in the garrisons of Central Asia and on the unhealthy southern frontiers of the empire. The fifth penalty was death, in various forms proportionate to the heinousness of the crime committed. T'ai Tsung had enacted that

every death sentence should be reviewed on three separate days, and that during this period the judge must abstain from meat, music and entertainments in order that the serious nature of his duty should be constantly present in his mind. As in all Chinese dynasties the laws against rebellion and conspiracy were very severe, the family of the criminal being liable to penalties varying in proportion to the degree of kinship with the chief accused. This system was a consequence of the clan organisation of society, for it was held that the individual was inseparable from his family, and in serious crimes such as rebellion and sedition the family must necessarily share the guilt of any member

The real function of the government was not so much the administration of the laws, which were largely customary, but the collection of revenue, and the promotion of agriculture on which revenue depended. For this purpose the rural population, excluding the official class and townsmen, was divided into five categories. Infants under four years, children from four to sixteen, adolescents from sixteen to twenty-one, adults from twenty-one to sixty, and the aged, over sixty. Adults, and boys over eighteen were assigned land to cultivate as tenants of the state. The terms of their tenancy were divided into two classes, rent and services As rent the tenant paid five *hu* of rice, a *hu* being the equivalent of 120 lbs. weight. According to the nature of the soil he also paid two rolls of fine silk and twenty feet of inferior quality, or in areas where silkworms were not reared, a proportionate quantity of hemp, cloth, or fourteen ounces of silver He further had to serve twenty days of forced labour on public works, paying three feet of silk for every day missed The scale of taxes and rents was posted on city gates, and in the market place of every village, in order that no one should have the excuse of ignorance of the law.

Remissions of rent and services were given in bad years, according to the loss sustained, and also to men who brought new land into cultivation. Land was allotted to landless adults, and if the population of any village or district was insufficient to cultivate the soil, the surplus was detached and incorporated in the next village, or sub-prefecture This fact perhaps accounts for the varying number of sub-prefectures at different times.

Land was measured (as it still is) by the *mu*, a strip 240 paces by one in area, one hundred of which made a *ching*, which was the standard allotment for an adult farmer The hundred *mu* plot was in theory intended to provide for all the farmers' dependents, forty *mu* for the aged and feeble, thirty for the widows and orphans, and the remainder for the family itself The farmers were divided into two classes, known as "broadlands" and "narrow-lands" respectively, the former having on the average double the holding of the latter In the remissions for bad years the "narrow-lands" received somewhat more favourable treatment. Merchants and artisans from the cities were not allowed to register themselves as state tenants, no doubt to avoid absentee tenancies and sub-letting. Merchants and townsmen were subject to a separate scale of taxation, graded in nine degrees and based on their property The tolls and navigation taxes also fell mainly upon this class. The poor, that is to say the landless coolies of the cities, who owned no property, and also foreigners—by which nomads and Central Asiatic merchants seem to be indicated—paid no taxes at all The coolie class, which must have been numerous in the big cities, as it is to-day, therefore does not appear in the censuslists.

For one or two years the record of what the state actually received by this taxation has been preserved. Changed values and some uncertainty as to the units mentioned make it difficult to assess the total in terms of western currencies In the year A D 746, on the eve of the rebellion of An Lu-shan, when the empire may be said to have been at the peak of prosperity, the revenue reaching the treasury was as follows:

In money, "more than" 2,000,000 strings of 1,000 cash per string.
In grain, "more than" 19,800,000 *hu* of 120 lbs each
In mixed kinds of silk, 7,400,000 rolls.
In fine silk, 1,800,000 rolls.
In cloth, 1,350,000 pieces.

A string of cash was theoretically the equivalent of one ounce of silver, which gives the value of the money received as 125,000 lbs of silver. The grain amounted to 1,060,714 tons.

In A.D. 780, some years after the rebellion of An Lu-shan had finally been suppressed, the revenue raised was.

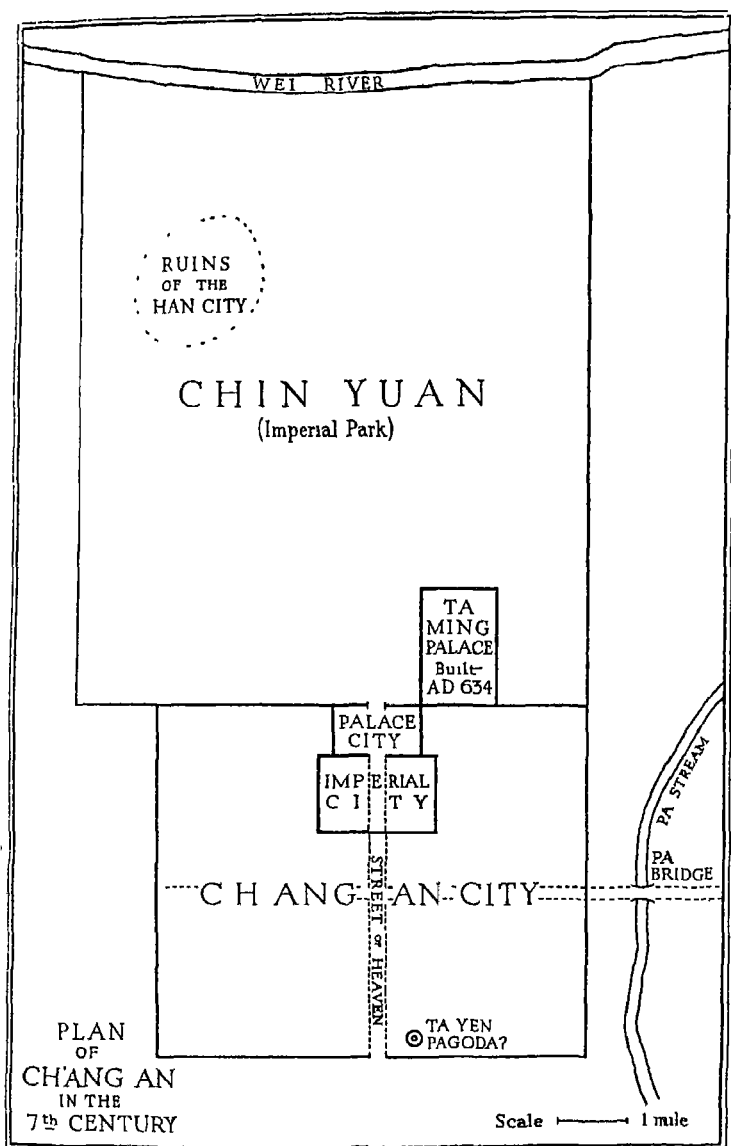
In money, 20,500,000 strings of cash
In grain, 4,000,000 *hu* (214,285 tons),

and the state expenditure amounted to

Money, 9,500,000 strings of cash
Grain, 16,000,000 *hu* (857,140 tons)

It is evident that in this year the grain transport had not recovered from the effects of the rebellion, and that the government must have bought grain for cash.

The transport of the tax grain to Ch'ang An was a source of perennial difficulty for the government The capital in this respect was awkwardly situated, for, although the valley of the Wei River, in which Ch'ang An stands, may have been less afflicted with drought than it is at present, it could not supply the wants of what was then the largest city in Asia, if not in the world. Figures for the actual population of the city itself are lacking, but those for the metropolitan district, including Ch'ang An itself and several small cities in the vicinity, are known for A D 742—at the height of its glory. There were 362,921 families, making 1,960,188 persons. In T'ang times the city of Ch'ang An was a rectangle six miles by five, an area of thirty square miles, and the population cannot have been less than a million. The modern city of Sianfu, built upon a small part of the T'ang site, is not more than two miles by three, and is not fully occupied. The population does not exceed 300,000, and is certainly much smaller than in T'ang times. (Map 9)

The grain producing areas were all in the eastern and southern provinces, the great plain and the Yangtze Valley, regions far removed from Ch'ang An, which was, moreover, in a plateau country on the upper course of the Wei River, and above the dangerous San Men rapids on the Yellow River. These facts, which made the strength of the "land within the passes" from a military point of view, were a serious drawback from the economic aspect. The tax grain came by water, up the Huai River and Grand Canal to the Yellow River, and thence to the mouth of the Lo River east of Lo Yang. To proceed further west it was necessary to enter the defiles where the river passes through high loess hills, this was dangerous navigation, impeded by a very strong current and difficult rapids.

MAP 9 *Ch'ang An in the 7th Century.*

The large river boats from the south and from the east could not go further west than the mouth of the Lo, necessitating a transhipment—with all the attendant possibilities of waste and theft The loss by shipwreck in the higher reach of the Yellow River was severe, in spite of strictly enforced penalties against the boatmen and officials responsible. At one period an attempt was made to avoid the rapids by transporting the grain by land to the mouth of the Wei. For this purpose not less than 1,800 carts were constantly in use As the road to the west, then the most frequented in the empire, for it led to the capital, passes through narrow gorges in the loess and crosses high ridges, the inconvenience to travel and commerce and the waste and expense of using the road for the tax grain led to the abandonment of the experiment. Ming Huang tried to instil a spirit of rivalry into the boats from various provinces and districts Honours were conferred upon the first boat to reach the Wei bridge at Ch'ang An. It was gaily decorated and played into port by a troupe of dancing girls and musicians. How successful the artist Emperor's remedy proved, is not related by the annalists.

A further disadvantage of the grain transport to Ch'ang An was the uneconomic nature of the enterprise. The boats which spent many weeks slowly travelling upstream against the force of the current, returned empty in less than half the time, but earned no profit on their journey. The large army of boatmen, officials and overseers were a charge on the very revenue which they were transporting As the years passed the quantity of grain needed to feed the capital and its host of nobles, officials and soldiers rose year by year In T'ai Tsung's time it was not more than 200,000 *shih*, about 10,714 tons, but by Ming Huang's reign it had risen to 160,714 tons (4,000,000 *shih*), and there can be no doubt that the cost and waste of this transport was one of the causes which led the eastern provinces to support the revolt of An Lu-shan, and free themselves from the incubus of Ch'ang An and its parasite Court.

The decline of Shensi and the final abandonment of Ch'ang An as capital of the empire—the T'ang were the last dynasty to reign there—was very probably due to a growing realisation of the inherent difficulty in transporting grain up the rapids of the

Yellow River, and the adverse currents encountered on the whole journey Later dynasties fixed their capitals in the eastern plain, or on the Yangtze, where access was easy and water transport short and safe, but they did not avoid the danger from which Ch'ang An was immune, exposure to the raids of nomad horsemen from the steppes In the last years of the T'ang dynasty, when the provinces under their military despots withheld the tax grain and brought the transport system to an end, Ch'ang An and even the Imperial Court suffered famine The inhabitants fled to happier districts, a general carried off the Emperor to Lo Yang, and the city, ruined by wars and hunger, was left an empty shell.

The land revenue and tax grain, though the most important, was not the only source of revenue at the disposal of the government. Minting of money, salt, iron, and later copper, were state monopolies, and taxes were imposed on wine (rice spirit) and later, after its rise to popularity as a beverage, in the 8th century, a tax was placed on tea (A.D. 793) In the middle of the 9th century the revenue derived from these sources amounted to 9,220,000 strings of cash, but the collection cost the state 3,000,000.

Figures also exist for the annual production of the mines of the empire and the salt wells. There were eighteen salt lakes including coastal marshes, and 640 salt wells, from which an annual revenue of 400,000 strings of cash was obtained. The mines of the empire produced in one year:

Silver	25,000 ounces (*liang*)			
Copper	655,000 catties (*chin*)	=	390 tons	
Lead	144,000	,,	=	85 ,,
Tin	17,000	,,	=	15 ,,
Iron	532,000	,,	=	317 ,,

The minting of copper coinage was a government monopoly, but it was not centralised at one mint. There were not less than 99 mints scattered over the empire, but mostly in the province of Shansi and in the lower Yangtze Valley, near the sources of the metal. The annual output of each mint was supposed to be 3,300 strings (of 1,000 cash each) which would give a total of 399,300 strings, but, in fact, it is stated that the total output was rather less, 327,000 strings, suggesting that not all the mints were worked at full capacity.

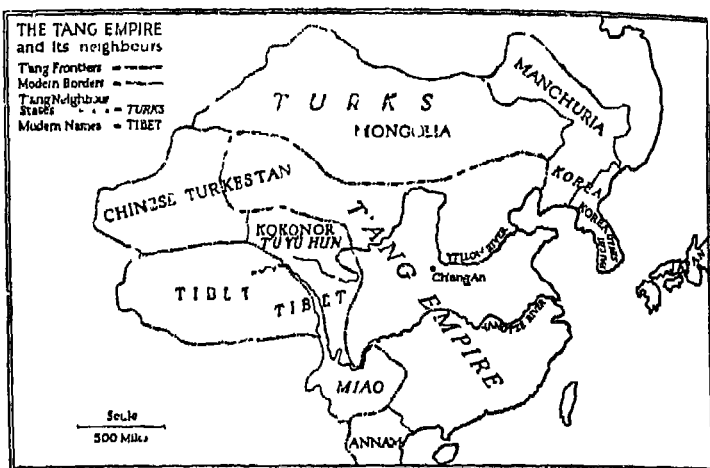
The government was constantly beset with the difficulty of counteracting illegal coining, which as in the Han dynasty, seems to have been practised on the largest scale. In A D. 722 the Emperor was obliged to declare a government monopoly of the manufacture of copper utensils, in order to prevent coiners from acquiring the raw material for their industry This measure does not appear to have had very much effect on the evil, no doubt because the coiners were able to utilise existing stocks or evade the prohibition.

Chapter XV

FRESH CONTACTS WITH THE WEST

UNTIL modern times there has been no period in Chinese history when the country was so open to foreign influences as in the T'ang dynasty. The Mongol conquest did indeed see a greater immigration of foreign settlers and mercenaries, but these were followers of the Mongol conquerors, hated and feared by the Chinese Their influence, which was resisted by the nation at large, was short and transitory. On the other hand the T'ang Court welcomed foreigners, took a keen interest in alien customs and religions, and extended a friendly welcome to priests and travellers from western regions. Consequently the art and thought of the T'ang period was strongly influenced by the nations with which China was in contact The charge of "Chinese exclusiveness" cannot be substantiated in this period.

Secure in their isolation and confident of their power to repel invasions, the T'ang Emperors did not fear foreign intercourse as a menace to the state, while the spirit of intellectual curiosity and tolerance which marked this age encouraged a sympathetic attitude to religious and artistic ideas of foreign origin Until the close of the dynasty the Court was in constant diplomatic relations with the major powers of western Asia, and the merchants and priests of these countries found easy access to all parts of the T'ang Empire (Map 10).

The T'ang world, if not larger, was far better known and more easily travelled than the world of the Han period. Regions which had only been known to the Han by hearsay, or by infrequent and hazardous voyages of exploration, were now perfectly familiar to the Chinese. The streets of Ch'ang An—as the grave figures, apart from literary evidence, amply attest—were frequented by men of the most diverse races, from Siberian tribesmen to the jungle peoples of southern India, Greeks, Arabs, Persians and Japanese Japan, indeed, was then almost a new land, hardly known in the Han period, but now sending embassies to China, and enthusiastically borrowing the culture and political organisation of the T'ang Empire.

MAP 10. *The T'ang Empire and its Neighbours.*

To the south, the countries of Cochin China, the islands of the East Indies, Ceylon and India, lands little frequented in the Han period, were visited by Chinese merchants and Buddhist pilgrims in search of relics and Sanskrit books. India, indeed, the sacred land of the Buddhists, was probably better known to the Chinese at that date than it has been at any subsequent period until modern times. Ch'ang An was in regular diplomatic contact with the more important states of Northern India, and even interfered in Indian politics on more than one occasion.

Almost coincident with the rise of the T'ang dynasty in China, a great revolution had transformed the map of western Asia In A.D. 642 the battle of Nehavend decided the fate of Persia, which fell before the Moslem arms Persia had long been familiar to the Chinese The Sassanian Empire and the northern Chinese Wei dynasty had been in close contact. This great empire, Rome's only successful rival, was destroyed to make way for the warlike Omayyad Caliphate, under which the Moslem faith was carried into the heart of Central Asia These events touched the Chinese closely, for their own empire reached westward to the fringes of the fallen Persian state.

The western limit of the Chinese world was the "kingdom of Fu Lin"—the Byzantine Empire. The Chinese knew this country

very well, better perhaps than China was known to the Greeks The T'ang histories have recorded four embassies from Byzantium to China, all between A D. 643 and A D 719, the period when Byzantium was hard pressed by the first onrush of the Arab armies of the Caliphs There seems to be little doubt that the purpose of these embassies was to enlist Chinese assistance in the war against Islam. To what extent the Chinese interested themselves in this question is obscure Certainly no T'ang armies were despatched to oppose the Moslems, but it is possible that the Greeks who came to China on these missions brought back with them some new knowledge of a technical nature, for at that time China was technically more advanced than the western world.* In A.D 643, when T'ai Tsung was on the throne, an embassy from "P'o To Li, king of Fu Lin" came to Ch'ang An and offered red glass and gold dust The reigning Eastern Roman Emperor at that time was Constans II, who was a child. "P'o To Li" is clearly not a rendering of his name, and has often been supposed to be a version of "Patriarch," the suggestion being that the mission was really a religious one. The Chinese histories, however, plainly state that it was the embassy of a king. At the time the government of the Byzantine Empire was largely in the hands of the chief military commanders, who bore the title of "Patrician" It is far more probable that it was one of these generals who sent the embassy to China and that "P'o To Li" represents the word "Patrice."

Fu Lin, the Chinese name for the Byzantine Empire, has been shown to be derived from the name Byzantium, for in the pronunciation of the 7th century, Fu Lin would be sounded "But Zan." The T'ang histories have a section devoted to Fu Lin, which while incorporating some of the Han account of Ta Ts'in (the Roman Empire) obviously contains further and contemporary information, perhaps gathered from these embassies, or from other travellers There is nothing in the T'ang histories to show that any Chinese embassy reached Constantinople.† Extracts

*Yang Hsien-yi, *Byzantine Embassies to China in the 7th and 8th Centuries.* Unpublished

†Yang Hsien-yi, *op. cit.* and Chiu T'ang Shu, Chap 198. Hsin T'ang Shu, Chap. 221.

from these T'ang accounts give the impression of observations made in the streets of Constantinople, rather than of the reports of ambassadors.

"Fu Lin is the ancient Ta Tsin It is situated on the Western Sea. To the south-east it borders Persia, to the north-east is the territory of the Western Turks. The land is very populous, and there are many towns. The walls of the capital are of dressed stone, and more than 100,000 families reside in the city There is a gate 200 feet high, entirely covered with bronze [the Golden Gate]. In the imperial palace there is a human figure of gold which marks the hours by striking bells The buildings are decorated with glass and crystal, gold, ivory and rare woods The roofs are made of cement, and are flat. In the heat of summer machines worked by water power carry up water to the roof, which is used to refresh the air by falling in showers in front of the windows

"Twelve ministers assist the King in the government. When the King leaves his palace he is attended by a man carrying a bag, into which any person is free to drop petitions The men wear their hair cut short and are clothed in embroidered robes which leave the right arm bare. The women wear their hair in the form of a crown The people of Fu Lin esteem wealth, and they are fond of wine and sweetmeats. On every seventh day [the Christian Sunday] no work is done.

"From this country come byssus, coral, asbestos, and many other curious products They have very skilful conjurers who can spit fire from their mouths, pour water out of their hands, and drop pearls from their feet Also they have skilful physicians who cure certain diseases by extracting worms from the head."

This account, which so clearly bears the character of a traveller's observations in the streets of Constantinople, is unfortunately the only detailed description of a European people which appears in T'ang records It is curious that no direct reference is made to the religion of the Greeks, although, as will be shown presently, the Chinese knew a great deal about Christianity at that time. The traveller to Constantinople, who-

ever he was, does not seem to have known the reason why the inhabitants "did no work every seventh day"

The first news of the rise of Islam was brought to China by an embassy from Yesdegerd, last Sassanian King of Persia, which reached Ch'ang An in A D. 638 The Persian monarch, then desperately defending the last corner of his kingdom at Merv, appealed to China for assistance against the conquering Arabs T'ai Tsung did not grant this request, no doubt feeling that his own empire, so recently delivered from civil war and Turkish attacks, was in need of peace, and Persia too far for military expeditions The Persians, although they did not get Chinese assistance, were welcomed as refugees. Firuz, Yesdegerd's son, whom the Chinese still called King of Persia, came to Ch'ang An in 674, when the Arab conquest of his hereditary possessions was complete. He was kindly welcomed and made a general of the Imperial Guard He died in Ch'ang An some years later. His son, only known by the Chinese form of his name, Ni-Ni-Shih, also lived in Ch'ang An, and is mentioned in the history of the time. The Persian refugees were allowed to build temples and practise the Zoroastrian faith, which flourished among this refugee community for many years

From these fugitives, and perhaps from Chinese travellers, the Court soon learned the origin of Islam and much about the country of its adherents, the Arabs Arabia was known as Ta Shih, from the Persian word Tarzi, meaning an Arab.

"Ta Shih," says the *T'ang Shu*,* "was formerly part of Persia. The men have large noses and black beards They carry silver mounted swords on a silver girdle They drink no wine and have no music The women are white and veil the face when they leave the house There are large halls for worship which can hold several hundreds of persons. Five times daily they worship the god of Heaven. Every seventh day [Friday] their King [the Caliph] seated on high, addresses his subjects, saying: 'Those who die in battle will be reborn in Paradise. Those who fight bravely will obtain happiness' Therefore their men are very valiant soldiers The land is poor and cannot grow cereals,

*Hsin T'ang Shu Chap. 221, part 2.

they hunt and live on meat, and collect honey among the rocks. Their dwellings are formed like the hoods of a cart [tents]. They have grapes which sometimes are as big as a hen's egg In the Sui period Ta Yeh [605-616] a man of the western peoples (*hu*), a Persian subject, was guarding flocks in the mountains near Medina A Lion-man [The Archangel Gabriel] said to him: 'To the west of this mountain, in a cave there is a sword and a black stone [the black stone of the Ka'ba] with white lettering Who ever obtains these two objects will reign over mankind' The man went to the place and found every thing as he had been told. The letters upon the stone meant, 'Arise.' He took the stone and proclaimed himself King. His countrymen tried to oppose him, but he defeated them all Afterwards the Ta Shih became very powerful. They destroyed Persia, defeated the King of Fu Lin, invaded northern India, attacked Samarkand and Tashkent. From the south-western sea their empire reached to the western borders of our territory"

This information was soon to be supplemented by direct contact with the new power. Between A.D 707 and 713 Kutaiba, the general of the Caliph Walid, began the conquest of Central Asia, and the region now forming Afghanistan, which, as Yüan Chuang's pilgrimage proves, was then a strongly Buddhist country. The kingdoms of Samarkand, Bokhara and the confederacy of the western Turks, finding themselves hard pressed by this formidable enemy, appealed to China The Central Asiatic states had recognised the vague suzerainty of Ch'ang An, or rather they hastened to do so when the Moslem invasion appeared imminent. The T'ang Court had hardly recovered from the perturbations which followed upon the death of the Empress Wu, consequently, the new Emperor, Hsüan Tsung (Ming Huang) was more prepared to listen to an Arab embassy proposing peace, than to the appeals of his neighbours

In A.D. 713 the ambassadors of the Caliph arrived at the Court, and were courteously received. The fact is interesting, for these proud strangers refused to perform the ceremonial prostration, *k'o t'ou*, which Chinese etiquette demanded of all who appeared

in the imperial presence. The Moslems declared that they prostrated themselves to no living man, but only to their god, and only bowed in the presence of kings. Tolerantly deciding that "Court etiquette is not the same in all countries," the Chinese Emperor waived the custom, and the Arabs were received More than a thousand years later the Manchu Court refused a similar concession to the English ambassador, Lord Amherst, and brought the mission to an end The purpose of the Arabs was to prevent China assisting the Central Asiatic states, and whether as Arab historians say, the Chinese were too impressed to oppose the Moslems, or whether the Court regarded the quarrel as too distant to merit interference, the T'ang Emperors did nothing at that time to hinder the Arab advance

In 751, however, the Chinese Empire did clash with the new Abbasid Caliphate, known to the Chinese as the Black Cloth Arabs, from the black flags of the Abbasids A Korean officer in Chinese service, commanding the troops stationed in Turkestan, was sent by the Court to settle the differences between two small states in the upper Indus Valley. The Chinese army, after crossing into this region and settling the questions at issue, returned and entered the kingdom of Tashkent, operations which had not been sanctioned by the distant Court. The general in command perhaps thought that at such a distance he was free to do as he pleased. In Tashkent he behaved most treacherously, seizing the King of that country after a treaty of friendship had been concluded.

This conduct outraged all the Central Asiastic states, which were perhaps tiring of a Chinese suzerainty which did nothing to protect them from the Moslems. The small states formed an alliance against the Chinese and called in the Arabs to assist them. The combined armies totally defeated the Chinese at a point in the Ili Valley, and this event, soon to be followed by the revolt of An Lu-shan, was fatal to the Chinese rule in Turkestan. The western states were swallowed up by the Moslem invasions, while the eastern part of the country fell into the hands of the Tibetans This war, in which the Arab army was commanded by the general Ziyad, serving the Caliph Abul Abbas, was the only occasion on which Chinese and Arabs actually engaged in formal hostilities.

Friendly relations with the Caliph were indeed soon restored, for a few years later Arab mercenaries sent by the Caliph Abu Jafar al Mansur in A D 756 helped the T'ang Emperor to defeat An Lu-shan and drive him from the capital These Arab mercenaries are of some importance in Chinese history as being the probable founders of the Muhammadan community in China, which to-day is variously estimated to number from five to ten million people, the higher figure being the more probable.

After the war against An Lu-shan was at an end the Arab troops did not return to their own country, either because having married Chinese women, they were unwilling to return, or,

FIG. 47. *Head-piece of the Muhammadan Tablet in a mosque at Sianfu A forgery of the Ming Period*

according to Arab accounts, because having lived so long in a pork-eating country they were regarded as defiled by their stay-at-home compatriots For whatever the reasons, the mercenaries settled in China, intermarried with the Chinese, but kept their faith. Unfortunately, no numbers are given for this settlement in contemporary accounts, though later sources say on the one hand that there were 4,000 men, and on the other, that there were as many as 100,000, which is very unlikely

Curiously enough, although the introduction of Buddhism, Nestorianism, and Manicheism are noted in Chinese history,

even though some of these religions did not take permanent root, the coming of Islam, which still flourishes, is nowhere recorded The subject is one of the most obscure points in later Chinese history. To-day the Moslems are very numerous, if not the majority, in Kansu province, and form a large proportion of the inhabitants of Shensi and Yunnan There is no province without a Moslem community, though with the exception of Yunnan, the provinces south of the Yangtze have not more than a few thousand Muhammadans each. But of the origin and growth of this community very little is known

The Muhammadan tablet (Fig 47) in the principal mosque at Ch'ang An bears a T'ang date, but, unfortunately, this monument is a forgery of the Ming period, in imitation of the genuine Nestorian tablet. Muhammadan tradition is manifestly unreliable, for it claims that Islam was introduced into China in the Sui dynasty, which came to an end some years before the Hegira. It is unquestionable that, although the Muhammadans now speak Chinese, dress as Chinese, and are in every way except their religion naturalised, they are of alien origin. Yunnan Muhammadans are most un-Chinese in appearance, and in the Muhammadan quarter of Ch'ang An Armenoid types predominate. The camel men of Shansi and Peking—who are all Moslems—frequently have well-grown beards and aquiline features, quite unlike the smooth-faced Chinese

The Muhammadan settlers are believed to have greatly increased under the Mongols, when men of all the races of Asia followed the conquerors into China They have also expanded through the practice of buying up Chinese children in famine times, who are then brought up in the faith. This custom has considerably diluted the blood of the Moslem community, so that a Moslem is not always to be recognised by his looks. The Chinese of adult age do not seem to have been converted to Islam in appreciable numbers, and certainly not in the early centuries. An Arab traveller who visited China at the end of the T'ang dynasty reports that he never heard of a single native who had embraced Islam, although he found flourishing communities of foreign Moslems in several cities.

Islam escaped the persecution which at the end of the T'ang

dynasty dealt a mortal blow to other alien creeds It is not known why this leniency was shown, for the religion is never mentioned in the records of the time. Perhaps the Caliph was too powerful a neighbour to permit liberties to be taken with true believers, or perhaps the Muhammadans were all foreigners and were therefore left in peace. The faith slowly increased its hold and numbers during subsequent centuries, and, in spite of the massacres which followed the Yunnan and Kansu Moslem risings in the 19th century, Islam is to-day in a flourishing state in China, more actively in touch with Muhammadan centres in western Asia than it has been for centuries

The rebellion of An Lu-shan, the conquest of eastern Turkestan by the Tibetans, and the disturbed state of the country further west during the Moslem conquest, combined to turn trade away from the ancient land route in favour of the sea route which then terminated at Canton. The fact is important as one of the influences which led to the rise of the southern provinces and the coincident decay of Shensi and the north-west. In Han times the sea route seems to have been very little used by the Chinese, though Egyptian Greeks made their way to Tonking by this route. In the period of partition, no doubt on account of the lawless condition of the north-west, the sea route became more important. Fa Hsien and other Buddhist pilgrims used this way to travel to or from India and Ceylon. In T'ang times Canton became a great centre of sea-borne trade, largely in Arab hands. The Arab and other foreign communities resident in the port were very large The Moslems had a Kadi elected by themselves, and were subject to Koranic Law, administered by him, an early precedent for the extraterritorial system. Abu Zaid, an Arab traveller who was in China towards the end of the T'ang period, relates that when Canton was taken by storm by the rebel Huang Tsao in A D. 879, 120,000 foreigners, Arabs, Jews, Zoroastrians and Christians, were massacred, as well as the native population of the city.

Abu Zaid may be exaggerating his figures, but the mere fact that such a number can have been regarded as possible proves that Canton had a very large foreign community, far larger than it has to-day. The mention of Jews is important. Jews are not

mentioned by the T'ang history, and if Abu Zaid is correct this is the first record of Jews in Chinese history The sack and massacre of Canton by Huang Tsao marks the end of an epoch in Chinese intercourse with the west. For many years the sea traffic did not recover from this blow and when, in the Sung dynasty, internal peace was restored, it was Kanpu, the port of Hang Chou, which held the first place as a resort of foreigners Although the Muhammadan states were the most important and nearest foreign power with which China had intercourse in the T'ang dynasty, other influences played a prominent part. The Persian refugees introduced their own religion, Zoroastrianism, which though permitted, does not seem to have gained converts among the Chinese themselves. There were Zoroastrian temples in Ch'ang An, and probably in Canton also, where Abu Zaid records the presence of "fire worshippers" A more important and wide-spread Persian creed was Manicheism, which flourished for some centuries.

This creed, which borrowed both from Christianity and Zoroastrianism, was founded by Mani, a Persian, who was put to death in A D 274. It spread both east and west after his death, westward as far as France where the Albigenses were heretics of Manichean faith, and eastward to China, where it is first mentioned in A D 694. In A D 732 the Buddhists initiated a persecution, which was not encouraged by the government, on the ground that this religion was that of the western "Hu," the Central Asiatics, whom the Court was anxious to conciliate. The fact that the Buddhists opposed the new religion argues a certain progress as it was evidently looked upon as a rival. The attitude of the Court was decided by the fact that the Uigurs, the Turkish tribe now dominant among the nomads, were almost entirely Manichean During the war against An Lu-shan the Uigurs lent the Emperor valuable assistance, providing the cavalry, and they were rewarded by fresh favours to their co-religionists resident in the empire

Archæological finds in Central Asia have shown that Manicheism was strong in Turfan and other places, and it was clearly not confined to foreigners resident in China In 768 and 771 special edicts permitting the building of new Manichean temples were promulgated, and the second specifically names the four

cities of Ching Chou in Hupei, Yang Chou near Nanking, Nanking itself, and Shao Hsing in Chekiang as places where temples might be built These places are all in the Yangtze basin, not an area where many foreigners or nomad Uigurs were likely to reside. The communities they served must have included a large number of Chinese converts Manicheism endured as long as the Uigurs, its protectors, remained powerful, but as will be related presently, when that support failed, the religion was speedily assailed and extirpated.

Somewhat earlier than the first mention of the Manicheans in China, another religion of western origin had been warmly welcomed at Ch'ang An. The Nestorian tablet relates the history of the introduction and subsequent fortune of that Christian sect during the first two centuries of the T'ang dynasty, and the substance of the story is confirmed by other Chinese documents. In A.D. 635 a Nestorian monk called O Lo Pen in Chinese—Father Weiger suggests Ruben—arrived at the Court of T'ai Tsung O Lo Pen was received by the Emperor in person, and orders were given that his books should be translated into Chinese. Somewhat later the monk was granted an audience in which he expounded his religion to the Emperor A favourable impression of Christianity was the result of this audience, for in A D 635, T'ai Tsung issued an edict couched in the following terms

> "The Way* has more than one name There is more than one Sage. Doctrines vary in different lands, their benefits reach all mankind O Lo Pen, a man of great virtue from Ta Ts'in (the Roman Empire) has brought his images and books from afar to present them in our capital. After examining his doctrines we find them profound and pacific. After studying his principles we find that they stress what is good and important His teaching is not diffuse and his reasoning is sound This religion does good to all men. Let it be preached freely in Our Empire"

Lest it be thought that this eulogy suggests that the Emperor was converted to Christianity, it must be remembered that T'ai Tsung also received and honoured the Buddhist pilgrim, Yuan Chuang, approved of Taoism, favoured the Confucians, and permitted

*Tao, the way of truth, religion in general.

Zoroastrianism The great T'ai Tsung was in this respect typical of his age and nation.

Nevertheless Nestorian Christianity had a considerable following in China, and, unlike the other alien creeds, it was supported by very influential people. The tablet states that under T'ai Tsung's son and successor, Kao Tsung, churches were built in every prefectural city, which, if it is true, would mean that Christianity had a greater success in the 7th century than it has achieved in modern times In A D. 698 under the Empress Wu, who was a fervent Buddhist, Nestorianism was persecuted to some degree, and as the Buddhists were responsible for this change of attitude it is probable that Christianity was felt to be a dangerous rival. The disfavour did not last, for at the succession of Hsuan Tsung (Ming Huang) Nestorians were once more befriended by the Emperor, who sent his brothers to attend the restoration of the altar at the principal church in Ch'ang An Later emperors continued the favour first shown by T'ai Tsung, even attending Nestorian religious services on more than one occasion.

When the tablet was erected, in A D 781, some years after the suppression of An Lu-shan's rebellion, the Nestorian Church was in a very flourishing condition, counting among its protectors and benefactors the celebrated Kuo Tzŭ-i, grand general of the forces and chief minister of the empire, the man to whom the T'ang Emperors owed the restoration of their throne Kuo Tzŭ-i is one of the paragons of loyalty and good faith most famous in Chinese history; if, as the tablet seems to suggest, this great man was a Nestorian, the Christians had the most powerful and upright man in China as their patron. It is recorded of him that he spent large sums in restoring and enlarging churches, giving alms to monks and priests and also held conferences with the Nestorian hierarchy If Kuo Tzŭ-i was not a baptised Nestorian, he must have been very near to the Christian faith.

With such powerful protectors, the first personages of the Court —for Kuo Tzŭ-i's daughter was Empress, and his son married an imperial Princess—it seems strange that Christianity should have totally disappeared within a century or so of the erection of the tablet. Catholic writers explain the fact by pointing out that Nestorianism is a heresy, not orthodox Christian doctrine, but

this argument (which in any case would not appeal to Protestant apologists) ignores the fact that Buddhism, which is not even a Christian heresy, survived the persecution it suffered in common with Christianity and the other alien creeds, but which proved fatal to the latter.

The great persecution, marking the end of the T'ang tolerance of foreign creeds, occurred in A.D. 843, when it was first directed against the Manicheans This religion had only been tolerated because it was that of the powerful Uigurs The Uigurs, however, were destroyed by their enemies the Khirgiz in A D 840, and the Emperor Wu Tsung, an ardent Taoist, immediately suppressed the Manichean faith by force. Seventy Manichean nuns were put to death in Ch'ang An, their temples were pulled down, their lands confiscated to the state, and their priests forced to abandon their distinctive dress and wear the costume of Chinese laymen Manicheism in China never recovered from the blow. Although stray references to the religion occur as late as the Mongol period, and isolated communities in the mountains seem to have practised the rites of the faith for some centuries, the Manicheans dwindled swiftly, and ultimately disappeared entirely from the Far East

Two years later, in A.D 845, the Emperor struck at all the alien creeds, including Buddhism. This religion, no doubt because it was the most widespread, was permitted under severe restrictions. Only one temple was allowed in each city, and not more than thirty monks were permitted to reside in each temple All other Buddhist priests were secularised, all other temples and monasteries seized and destroyed by the state.

The Christian and Zoroastrian churches and temples were suppressed without exception, the priests forbidden to preach their religion, and the monks secularised; 4,600 temples of these three religions were destroyed, and 260,500 priests and nuns forced to return to the world Of this number only 2,000 are said to have been Christian, and 1,000 Zoroastrian; the rest must have been Buddhists The number of priests is not perhaps an accurate guide to the number of Christians, for the Buddhist priests, or more correctly monks, form a much higher percentage of the faithful than the ratio of Christian priests to their flocks.

The persecution, though severe, was short. Wu Tsung died in

the following year, and his successor reversed the treatment of the Buddhists, whom he favoured. Buddhism at once recovered its former strength. Christianity and Zoroastrianism collapsed. In A.D. 987, a hundred years later, Abu Faraj, an Arab writer, records that when in Bagdad he met a Nestorian monk who had recently returned from China, where he had been sent by the Patriarch to inquire into the condition of the faith under the newly-founded Sung dynasty. The monk had found the churches ruined and deserted, the Christian community extinct, and, as there were no co-religionists for him to minister to, he had returned to Bagdad.

Christianity, however, seems to have left some impression on the Chinese Court, as is evidenced by the wide knowledge of foreign religions shown by the Emperor I Tsung, who in 872, thirty years after the persecution, gave an audience to the Arab traveller Ibn Wahab of Basra, who related his experiences to Abu Zaid after his return to Iraq:

> "When I was received by the Emperor," Ibn Wahab relates, "he told the interpreter to ask me, 'can you recognise your Master, if you see him?' The Emperor referred to Mahomet, upon whom be God's Blessing I replied: 'How can I see him, since he is in Heaven with the Most High God?' 'I am talking of his likeness,' said the Emperor. 'I would know that,' I replied. Then the Emperor called for a box containing rolls which he put in front of him, and passed them to his interpreter, saying. 'Let him see his Master.' I recognised the portraits of the Prophets, and I said a blessing 'Why are you moving your lips?' asked the Emperor. 'Because I am blessing the Prophets,' I answered. 'How did you know them?' he asked. 'By their attributes, for instance, here is Noah with his Ark, which saved him and his family when at the command of God all the earth was drowned in the Food.' At these words the Emperor laughed, and said, 'You have certainly recognised Noah. As for the Flood, we do not believe it The Flood did not submerge the whole world. It did not reach China or India.' 'That is Moses with his staff,' I said. 'Yes," said the Emperor, 'but he was not important and his people were few.' 'There,' I

said, 'is Jesus on his ass, surrounded by his apostles.' 'Yes," said the Emperor: 'He lived only a short time. His mission lasted only thirty months.' Then I saw the Prophet on a camel, and his companions, also on camels, around him. I wept, being much moved. 'Why do you weep?' asked the Emperor 'Because I see our Prophet, my ancestor.' [Ibn Wahab was of the Koreish] 'Yes, it is he,' said the Emperor 'He and his people founded a glorious empire. He did not see it completed, but his successors have.' Above each picture was an inscription [in Chinese] which I supposed to contain an account of their history I saw also other pictures, which I did not recognise. The interpreter told me that they were the prophets of China and India."

From this fascinating story it can be seen that the Chinese Court had a library containing much information about the western religions, and, moreover, that the Emperor was perfectly familiar with the leading events and characters of western religious lore. This audience, in A.D 872, took place a very few years before the rebellion of Huang Tsao reduced the T'ang Empire to chaos and partition. During those violent years foreign intercourse naturally diminished, and was not fully restored till China had recovered internal peace under the Sung dynasty, nearly a century later

Chapter XVI

THE GOLDEN AGE OF POETRY

Before the T'ang period poetry had lagged behind the other branches of literature in China The classical period nevertheless had the very ancient anthology of songs, poems and ritual hymns, which together make up the *Shih Ching* (The Odes) In the eyes of a Confucian scholar these would always rank higher than the poetry of later times, but that is because they were valued not so much for their poetic qualities as for the moral instruction they were supposed to contain, and, because tradition attributed the compilation to Confucius himself. In the late feudal age, the 3rd century B.C, there was one very famous poet, Ch'u Yüan, a minister at the Court of the King of Ch'u Ch'u Yuan's elegies were a new form of poetry which seems to have been confined to the south, and, though imitated by less inspired poets after the master's death, did not exercise a lasting influence on poetry in other parts of China The most famous of his poems is the *Li Sao*, "Encountering Sorrow," a love allegory which alludes to the poet's fall from favour with the King of Ch'u Ch'u Yüan drowned himself in the Mi Lo River in Hunan, and the celebrated Dragon Boat Festival is said to have been instituted to commemorate the search for the poet's body

The Han period was not a great age of poetry. There were indeed poets who are still admired, but, compared to the prose works of this dynasty, the poetry is insignificant. The period of partition which followed the fall of the Han dynasty was dominated by the powerful influence of new religions, Buddhism and the new forms of Taoism. The poetry of this period is not rated very highly by the Chinese, although it was then that an important development originated. Shên Yo (A.D. 441-513) was the first poet to use tone values, inventing the kind of verse called *lu shih*

The Chinese language, being monosyllabic, is very rich in homophones, i e words distinguished only by the use of differing tones In *lu shih* verse tone values are developed in accordance with certain rules, as the name *lu shih*, "regulated poetry,"

implies. Before the time of Shên Yo tone had been ignored. This old poetry (*ku shih*) was not entirely superseded by the tone poems; it continued to be written, not only in the T'ang period, but down to modern times It was not until a hundred years after the death of Shên Yo that the T'ang poets, taking up his idea, raised poetry to a height which it had never before attained, and which has hardly ever been equalled in later centuries.

The three centuries of the T'ang period were beyond dispute the golden age of poetry in China. There was, indeed, hardly any branch of art in which the astonishing genius of that age did not excel In the first half of the 8th century the greatest painters, poets and sculptors gathered at the Court of Ming Huang the well-named "brilliant Emperor" who made Ch'ang An the most civilised capital in the world, the admiration and despair of succeeding dynasties In literature, however, it was poetry which suited the genius of the T'ang age more than any other branch. The quantity produced in that dynasty is enormous, and the long list of T'ang poets amounts to nearly 3,000 names. Obviously, not all T'ang verse is first-rate, and perhaps some T'ang poets would not be highly esteemed if they had written under later dynasties, yet almost all the most famous poets of China lived in that period, and many of them were contemporaries. There was some quality in the culture of the T'ang epoch which was peculiarly favourable to poetry and less in tune with the classical tradition which inspired the philosophers of an earlier, and again of a later dynasty

The T'ang period was the romantic age in China The long reigns of the Empress Wu and Ming Huang, covering the second half of the 7th and first half of the 8th centuries, favoured the development of refined culture, and were at the same time a period of innovation and experiment. Confucian traditionalism was in temporary eclipse. There has never been an age since it became the established and orthodox doctrine when the influence of classical scholarship was weaker. The Empress Wu was a fervent Buddhist, and Ming Huang himself was more inclined of Taoism than to the traditional doctrines With the exception to T'ai Tsung, who was orthodox, but completely tolerant, hardly one of the T'ang Emperors wholeheartedly favoured the

Confucian ethics This negative attitude did not imply an open repudiation of the orthodox doctrine upon which the whole educational system reposed, and upon which the moral authority of the government was supposed to be founded Even the poets themselves, with the possible exception of the greatest, Li Po, were Confucian in outlook, though Taoist in inspiration.

In the T'ang period, an age at once more refined than the preceding Han Empire and less sophisticated than the Sung dynasty which followed, Chinese civilisation attained a harmonious balance between Confucian objectivity and Taoist introspection which was an ideal atmosphere for the cultivation of the arts The society of Ch'ang An was not wholly frivolous nor was the Court entirely occupied in ministering to the extravagant caprices of ladies such as Yang Kuei Fei The century of the artists and poets was also the century of the fervent Buddhist pilgrims and preachers and of the vigorous imperialism of the frontier generals. It was a many sided age, less hide-bound by conventions and more receptive to new influences than other periods of Chinese history.

It is a truism to repeat that poetry of all the arts is the most national and the hardest to appreciate for those unacquainted with the language of the originals Translation may capture the spirit, but it must inevitably lose the form of the poem itself, and when as in the case of translations from Chinese into English, the structure and sound of the two languages differ profoundly, the task of the translator is immeasurably increased In this field scholars well equipped to render the Chinese into English with poetic form have published a wide selection of the most famous Chinese poems,* which since they convey the spirit of Chinese poetry, are infinitely preferable to halting prose renderings.

The European reader will find certain differences between Chinese and western poetry which are independent of questions of language and technique. Love, which plays so large a part in European poetry, is a rare theme Metaphor is hardly employed

*Arthur Waley *A Hundred and Seventy Chinese Poems*
H. Giles. *Chinese Poetry in English Verse.*
F. Ayscough and A Lowell *Fir Flower Tablets*
F. Ayscough. *Tu Fu*

and simile is restricted Such a line as "Vaulting ambition which o'erleaps itself" cannot be found in Chinese poetry. Classical allusions, obscure to anyone who has not been brought up on the Confucian classics, are frequent. This, indeed, became the vice of later Chinese poetry, ultimately reducing it to an elegant but lifeless artificiality. In the T'ang period the disease was in its infancy, and had not produced the petrifying effects which makes so much Ming and Manchu poetry arid and conventional.

The absence of love poetry in Chinese literature is a consequence of the social system which admitted no courtship or free choice in marriage. A man married a girl chosen by his parents without his consent or opinion being asked He never saw his bride until the marriage ceremony was ended, and should a chance meeting have occurred, this in itself was looked upon as a reason for cancelling the betrothal Love therefore came after marriage, if at all. Illicit love, later the theme of the novelists, was not a subject which could decently be treated in a scholarly art such as poetry.

One result of these marriage customs was to enhance the emotional value of male companionship, making friendship the most intimate and binding relation outside the ties of family life. In Chinese society friendship plays a part and imposes obligations which would seem excessive in the west Even the most ardent supporter of his "old school" in England would flinch at the prospect of having to support his former schoolmates in his home for an indefinite period, merely because they had no relations of their own in that part of the country In China this would be regarded as a matter of course. The ties of friendship, and the evil corollaries of nepotism and cabal, permeate Chinese social and political life, and are a dominant theme in literature.

In poetry friendship fills the place which love occupies in European poems, and, as the emotional crisis of friendship is the moment of separation, parting from a friend inspires many of the best poems in China. The circumstances of the poets' lives in China made such separations frequent and prolonged. Poets were necessarily members of the educated class of scholars from whom the ranks of the officials were filled Unlettered poets could hardly exist in a country using an ideographic script which

requires several years of study before the student can read or write. Moreover, since poetry was written in the literary style which used an idiom not employed in every-day speech, only the sons of the rich, or those who were sent to school at the expense of the wealthy members of the clan, could acquire the necessary education.

The great poets of China, therefore, were one and all members of the scholar class, though not all of them were employed in the public service Whether serving the state or living in retirement they were constantly parted from their friends, who might at any time be appointed to a distant post, or banished from the capital as a result of some political change. The immense distances of the Chinese Empire, the dangers of travel, and the inadequate means of communication made these partings a very real and often final separation of two friends, who might not meet again, at best, for many years The fact explains and illuminates the frequent theme of leave-taking in Chinese poetry.

Friendship and parting take the place of love and frustration, and war, too, is treated from a different standpoint. There were no soldier-poets in China—scholars were not warriors—and when a Chinese poet writes of war or battles it is to paint the horrors and desolation of warfare rather than the glory and joy of battle For the same reason the patriotic aspect of military life is ignored by Chinese poets Deeply penetrated by the Confucian doctrines which formed the basis of their education, the Chinese scholar looked upon war as a calamity, whether the imperial arms were successful or the reverse. The very necessity of war was proof of inferior virtue in the Son of Heaven, for Confucians had always contended that a truly virtuous prince would have no enemies The force of his moral qualities would in itself suffice to keep the peace within the empire and pacify the barbarous peoples beyond the frontiers. Rebellion was an indication of bad government, and foreign wars a confession of inferior virtue.

Taoism, at least in the T'ang period, was as strong an influence on poetry as Confucian morality. From this source the poets learned the doctrines which sent them to nature for inspiration. Taoism rejected the world and its honours, teaching that truth could only be found in the secluded hermitages of the high mountains and wild forests, the haunts of the immortals who had

obtained the secret of long life and a true understanding of the Tao. The influence of Taoism, so apparent in Chinese painting, is equally strong in poetry, though Confucian writers, unwilling to admit the fact, have tried to make light of the obvious Taoist inspiration which dominates the works of Li Po

The career of Li Po, who is generally recognised as the greatest of Chinese poets, is typical of the life of a scholar poet in the T'ang period, and illustrates the opposing influences of Confucian duty and the Taoist ideal of retreat. Although Li Po claimed descent from Li Kao, Prince of West Liang in the 4th century, who was the ancestor of the imperial house of the T'ang dynasty, this distant connection, if acknowledged by the Emperor, does not seem to have conferred any remarkable privileges on the poet's family. Li Po was born in Szechuan, most probably in the year A.D. 701, but his family were not very well to do or influential.

He is said to have been a precocious child, mastering the classics at an early age Perhaps this intensive education in Confucianism produced a reaction, for, when still a youth Li Po went to a secluded retreat on Mount Min, where he studied Taoism with a hermit. He does not appear to have made any attempt to qualify for the public service, for, when he left Mount Min he did not visit the capital, but set out on extensive travels in all parts of China. In A D. 724 he was in Shantung, where he made one of a literary coterie known as the "Six Idlers of the Bamboo Grove," a name clearly intended to recall the famous Taoist "Seven Sages of the Bamboo Grove" of the Tsin dynasty (see Chapter XII).

During further travels in Honan and Shansi he had occasion to befriend a poor soldier who was one day to repay the service by saving Li Po's life. This obscure soldier was none other than Kuo Tzŭ-i, who, after the revolt of An Lu-shan, became the commander-in-chief of the imperial armies, chief minister of the empire, and the patron of the Nestorian Church in China In A.D. 738, in Shantung, Li Po met his great contemporary, Tu Fu, a poet who ranks as his equal, and in the eyes of many Chinese critics, his superior. Li Po and Tu Fu became lifelong friends, and their intimacy is mentioned in many poems by both writers.

It was not until A.D. 742 that Li Po went for the first time to

the capital, where he was introduced to Court circles by a Taoist scholar whom he had met on his travels in Chekiang The Court was then dominated by the famous Yang Kuei Fei, the beautiful concubine who reigned supreme in the affections of the ageing Emperor, Ming Huang. Li Po was already famous as a poet, indeed, he was introduced to the Emperor as a "banished immortal"—a divine genius in mortal form—and Ming Huang immediately gave him a sinecure post with the duty of writing poems to commemorate Court festivities.

This does not seem to have been a very exacting task, for Li Po had plenty of leisure to indulge his weakness for wine, and enjoy the society of a group of friends of similar tastes who called themselves the "Eight Immortals of the Wine Cup." Tu Fu has written a celebrated poem about the Eight Immortals, who were all men of distinction and culture:

Chih-chang, astride a horse, seems on board a boat;
Giddy, eyes dim, he drops into a well and sleeps under water.

Prince Ju-yang drinks three measures, then starts for an audience before Heaven;
On the road he meets a cart of barm: from his mouth trickles the saliva;
He feels annoyed that he is not transferred to govern beside the Wine Springs.

High Adviser of the Left day after day wastes ten thousand pieces;
He drinks like a long whale, sucking in the one hundred streams;
When holding a wine-cup to his lips, he says: "I rejoice in clear wine of Enlightened Men; I fly moreover from thick draughts of Virtuous Worthies."

Tsung-chih in beauty of his early years is distinguished and exceedingly refined;
Grasping wine goblet, he turns up his bright eyes towards blue empyrean;
His skin is white as tree of jade which bends before the wind.
Su Chin sits for ages in abstraction before Maitreya Buddha;

When in his cups, gone, gone, is this desire; he flies from meditation

Li Po after one measure produces one hundred poems;
He sleeps in a wine shop at Ch'ang An market-place,
The Son of Heaven summons him to the Presence, he does not board the boat;
He styles himself "Official who is an Immortal of Wine."

Chang Hsu, after three cups, writes inspired characters;
Throws off his cap, appears bare-headed before the Prince and high officials,
Strokes of his long-haired writing brush drop on the paper like clouds or driving mist.

At five measures, Chiao Sui becomes extremely eloquent,
Talks learnedly, argues vigorously, startles all who sit on the four sides of the feast.*

Li Shih-chi had been a minister of the government until he resigned to avoid the jealousy of rivals; Chin, Prince of Ju-yang, was a member of the imperial family; Tsui Tsung-chih, a close friend of Li Po, was a historian, and Chang Hsu a celebrated calligrapher, Su Chin was a Buddhist, although he did not allow his religion to interfere with his love of wine, and Ho Chih-chang was the friend who had first brought Li Po to the Emperor's notice.

Li Po enjoyed the society of these friends and the favour of Ming Huang for three years, until he was forced to leave Ch'ang An for ever as a result of a Court intrigue. The causes of his disgrace are variously attributed to the jealousy of rivals and to the enmity of the powerful chief eunuch, Kao Li-shih It is said that on one occasion Li Po, when drunk at a Court banquet, made the eunuch pull off his shoes, an insult which Kao Li-shih would not forgive Li Po had written a poem to commemorate a spring festival in the peony gardens of the palace, and Kao Li-shih told the favourite, Yang Kuei Fei, that in this poem Li Po, while seeming to praise her beauty, had compared her to Lady Flying Swallow (Fei Yen), a Han dynasty beauty. This was a back-

*Florence Ayscough *Tu Fu, the Autobiography of a Chinese Poet* 1929 pp 83-5

handed compliment, for Lady Flying Swallow had deceived the Emperor, and fallen into disgrace. Yang Kuei Fei resented the comparison and obtained the poet's dismissal. Whether this story is true or not it is quite in character.

After leaving Ch'ang An, which was soon to experience the fury of An Lu-shan's rebel soldiery, Li Po went to Shantung, where he studied Taoism at the residence of the T'ien Shih, the spiritual head of the Taoist religion.* Later, the poet wandered south again to Nanking, where he found his friend Tsui Tsung-chi also in exile. The rebellion of An Lu-shan found Li Po at Lo Yang, from which city he escaped just before the rebels captured it. He took refuge in the south once more, and joined the staff of Li Ling, Prince of Yung, who was organising resistance to An Lu-shan in the Yangtze Valley. Li Ling, however, attempted to profit by the confusion following the abdication of Ming Huang to make himself Emperor. His plans fell through, and he was disgraced, Li Po being put into prison as an accomplice. In this extremity, for he was under sentence of death, Li Po was saved by the intercession of Kuo Tzŭ-i, then commander-in-chief and chief support of the tottering throne, who remembered the poet's kindness to him thirty years before.

Li Po was reprieved, but sentenced to banishment to the frontier district of Yeh Lang, in what is now the modern province of Kueichou. He travelled slowly up the Yangtze, making many and long stays with friends on the way. After three years he still had got no further than Wu Shan, above the gorge of the same name in Szechuan, when a general amnesty relieved him of the necessity of proceeding further. He was now an old man, and the glory of Ming Huang's Empire had departed. Li Po travelled slowly back to T'ai P'ing in Anhui, where a relative held office, and there, in A.D. 761, he died.†

Li Po was not the only famous poet of Ming Huang's age and

*The modern T'ien Shih lived on Lung Hu Shan (Dragon and Tiger mountain) in Kiangsi until, in 1928, he was driven away by the Communist armies.

†Traditionally by drowning in the waters of the Yangtze when trying to embrace the reflection of the moon in the water. A temple on the bluffs at Ts'ai Shih Chi, about fifteen miles from Nanking, marks the site.

Court His friends, Tu Fu (A.D 713-768) and Mêng Hao-jan (A.D 689-740), are two of the greatest poets of the T'ang or any other period. Tu Fu was a more scholarly writer than Li Po, paying strict attention to the rules of the *lu shih* form of poetry, which Li Po sometimes contravenes or ignores. Tu Fu, for this reason, is sometimes considered to be the scholar's poet, while his friend's work makes a wider appeal to the less literate class. Chinese critics as a whole prefer Tu Fu, but the universal appeal of Li Po's poetry can be better appreciated in translations. Tu Fu, like his friend, never rose to any great eminence in the public service He failed to qualify in the civil service examinations, on account, it is said, of the jealousy of the examiners. Later, this unjust disqualification was reversed, and he held small posts at the capital and elsewhere before the rebellion of An Lu-shan.

During the chaos following the fall of the capital he suffered every kind of misfortune and privation He was captured by bandits, and, even after he had escaped and joined the fugitive Emperor Su Tsung, Ming Huang's son and successor, he was in such poverty that some of his children died of undernourishment. The last years of his life were spent in happier circumstances in Szechuan, a fortunate province which escaped the ravages of the war. Tu Fu died in A.D. 768 as the result of privations experienced on a journey in the mountains of eastern Szechuan.

Mêng Hao-jan and Wang Wei (A D. 699-759) were slightly older men than their more famous contemporaries The former, indeed, died some years before the fatal rebellion broke out. Li Po's poem, "Taking leave of Mêng Hao-jan at the Yellow Crane Tower" must have been written on some occasion before Li Po went to Ch'ang An, for by then the elder poet was already dead Mêng Hao-jan holds a high place in the estimation of the Chinese, but his poetry has as yet been very little translated into English. Wang Wei, who is equally famous as a painter, was an ardent Buddhist, and occupied important government posts under Ming Huang When the capital fell into rebel hands An Lu-shan carried him off captive to Lo Yang, where the rebel had his headquarters, and Wang Wei was forced into his service He managed to send a secret letter to the T'ang Emperor, Su Tsung, protesting his fidelity, and when he escaped from the rebel country this

precaution saved his life Although pardoned and re-employed, he could not forget the disgrace of having preferred life in rebel service to the Confucian ideal of a "loyal death," and he soon retired. In the mountain retreat, where he spent his last years he pursued his Buddhist studies, and when he died left this property to the church to be converted into a monastery

Po Chu-i, one of the greatest names in Chinese poetry, who is usually ranked with Li Po and Tu Fu, belonged to a later generation, the period of comparative quiet and recovery which followed the suppression of the rebellion by Kuo Tzŭ-i. He was born in A.D 772, and like Wang Wei, was a native of the northern province of Shansi. Unlike Li Po and Tu Fu, who never had a regular official career, Po Chu-i spent a long life almost entirely in government service, in which he rose to very high rank His career, as was so often the case with Chinese officials, was checkered with the usual ups and downs of favour, banishment, promotion and disgrace, but at the end of his life he obtained the governorship of Honan with his residence at Lo Yang, the alternative capital of the T'ang dynasty.

Much of his life before this long-awaited promotion had been spent at minor posts in the south, Szechuan, the Yangtze Valley and Chekiang, where he was governor of Hang Chou, and he was very little at Court. Even when, in A.D 831, he finally retired, he chose the secluded village of Lung Mên, the Buddhist shrine near Lo Yang as his retreat, in which to pass the last fourteen years of his life It was during the leisure hours of this long official career that Po Chu-i wrote the great volume of poetry which won him, even in his own lifetime, recognition as one of the greatest of Chinese poets, although the poems which gained the popular approval were not those which the poet himself valued the most.

Po Chu-i was orthodox and Confucian in his outlook and the poetry which expressed this doctrine did not make the appeal which he expected. It was his romantic poems, and in particular the long poem called the "Everlasting Wrong," which aroused the enthusiasm of contemporaries, and it is for this poetry that he is remembered. "The Everlasting Wrong," one of the longest poems in the Chinese language, is a romantic account of the tragic love of Yang Kuei Fei and Ming Huang, interwoven with

the rich thread of Taoist legend. When Ming Huang, old and broken in spirit, returns to the ruined capital from which the rebels have recently been expelled, he endeavours by magic arts to find the soul of his beloved At last a Taoist discovers her, neither in Heaven nor the underworld, but in the spell-bound isle of P'êng Lai in the Eastern Sea, on which no ordinary mortal can ever land. There Yang Kuei Fei is able to give the imperial messenger a word of hope. One day, in some future existence they will be re-united, but time cannot efface the "everlasting wrong" which Ming Huang committed in sacrificing his beloved to the mutinous soldiery

At a time when the story was still recent history it is easy to understand how this poem became so well known that even dancing girls could recite it by heart Po Chu-i, who did not regard it as his best work, could never make his moral poems prevail against the romantic tendencies of the age, tendencies to which he yielded in such poems as "The Everlasting Wrong," with its very un-Confucian moral

Although the T'ang dynasty is especially renowned for poetry other branches of literature were not neglected Among the contemporaries of the famous poets there were Buddhist theologians, Confucian scholars and historians, as well as the first writers to explore the hitherto untouched fields of drama and fiction. Every literary development of later Chinese history, Sung philosophy alone excepted, can be traced back to those great centuries The drama which is the only intellectual glory of the Mongol Yuan dynasty, originated at Ming Huang's Court, and that Emperor is still venerated by actors as their patron The novels of the Ming and Manchu dynasties developed from the short stories which were first written in the T'ang period.

The most famous prose writer of the T'ang dynasty is without question Han Yu (768-824), who is reckoned as one of the greatest Confucian scholars of Chinese history, not only on account of his resolute orthodoxy in a lax age, but also for the vigour and purity of his style Apart from the literary qualities of Han Yü's writings, he is an important figure as the link between the Han Confucian scholars and the Sung philosophers He represents, superbly, the basic practical and anti-mystical

outlook which characterises the Chinese mind He typifies the unchanging realism of the Confucian tradition which opposed and defeated the Buddhist evangel.

Han Yü, however, was not a blind conservative reiterating moral maxims in a scholarly detachment from practical issues He proved in action that the Confucian theory of government by moral authority was not a vain ideal He had the moral and physical courage not only to oppose the fervent Buddhism of the Court in outspoken essays, but also to go unarmed into a rebel camp and preach Confucian loyalty to a contumacious governor. His anti-Buddhist memorials and essays brought him disgrace and exile to a remote region of Kuangtung province, then an uncivilised district on the frontier of the empire Han Yu, however, rose superior to his misfortune In his exile he applied his principles to the government of the district, and had the triumph of leaving it happy and prosperous when he was recalled to the capital.

In his time, the generation following the rebellion of An Lu-shan, the Emperor no longer wielded undisputed authority over the distant governors The viceroys of the eastern provinces far from the Court could not be coerced without plunging the empire into civil war, and, consequently, they tended to grow more and more independent, transmitting their authority to their sons and grandsons In A D 822 the governor of a district in Hopei refused obedience and attacked his neighbour in the hope of adding more territory to his fief The imperial armies, ill paid and without provisions, were unable to reduce him to submission In this emergency the Emperor sent Han Yu to try the effect of persuasion where force had failed Attended only by a few bodyguards Han Yu made his way to the rebel's camp and demanded an interview with their leader. His arguments made some impression upon the rebel governor, and still more upon his officers, who had less to gain and more to lose by opposing the Court. Probably fearing that defiance would be followed by a mutiny in his army, the rebel chief agreed to terms, and Han Yü returned to Ch'ang An, having triumphantly vindicated the authority of the Emperor and the Confucian theory of government

In A D 819, the Emperor Hsien Tsung, who was a fervent

Buddhist, proposed to bring a celebrated relic, the finger bone of Buddha himself, from the monastery of Fa Mên Ssŭ at Fêng Hsiang Fu to Ch'ang An, where it was to be lodged in the imperial palace for three days and then exhibited in the various temples of the capital This was the occasion on which Han Yü penned his famous memorial to the throne against Buddhism. The piece is too long to cite in full, but the condensed version included in the official history sufficiently indicates its character:

"Buddha is a god of the western countries, and if Your Majesty honours and worships him it is only in the hope of obtaining a long life and a peaceful and happy reign. In antiquity, however, Huang Ti, Yu, T'ang the victorious, and the kings Wên and Wu all enjoyed long lives and their subjects dwelt in unbroken peace, although in those days there was no Buddha It was only under the Emperor Ming of the Han dynasty that this doctrine was introduced into the empire, and since that time wars and disorders have followed in quick succession, causing great evils and the ruin of imperial dynasties It was not until the period of the Six Dynasties that the sect of Buddha began to spread, and that age is not far distant from our own.

"Of all the sovereigns of these dynasties only one, Liang Wu Ti, occupied the throne for forty-eight years, and what had he not done to obtain happiness and peace from Buddha? Three times he sold himself to become a slave in a monastery*, and what reward did he receive for this?

"Only a miserable death from hunger when besieged by Hou Ching Yet he always used to say that he only did these things so little suited to an Emperor in the hope of obtaining happiness from Buddha, but all it brought him was greater misfortune. For Buddha was only a barbarian from the western kingdoms who recognised neither the loyalty which binds a subject to

*This refers to the fact that Liang Wu Ti renounced the world three times and became a Buddhist monk On each occasion he was only persuaded to return to the throne when the monastery had been compensated by payment of a large ransom. Hou Ching was the rebel who captured Nanking and brought the Liang dynasty to an end

his prince, nor the obedience which a son owes to his father * If he was living now and came to your Court, Your Majesty might accord him one audience in the Hsüan Chêng Hall, invite him to a banquet at the Li Pin office,† bestow gifts upon him, and escort him to the frontiers of the empire, without permitting him to have any contact with the people.

"This man, Buddha, however, has long been dead and decomposed, and now a dried bone, which is said to be his finger, is offered to Your Majesty and is to be admitted into the imperial palace I dare to ask Your Majesty rather to hand this bone over to the magistrates so that it may be destroyed by fire or water and this pernicious cult exterminated. If Buddha is what he is claimed to be and has the power to make men happy or unfortunate, then I pray that all the evils which may arise from this act shall fall on me alone, for I am confident that he has no such power "

It was for this memorial that Han Yü was banished to far-off Kuangtung. When he returned to Court and high office under the next Emperor, Mu Tsung, his protest was still fresh in the public memory. Han Yu was appointed assessor of the ministry of war, a post which gave him authority over the discipline of the army. There was at once a marked improvement in the conduct of the soldiers, and the men were heard to say that one who was prepared to burn the finger of the Lord Buddha himself would think nothing of executing common soldiers

*Gautama renounced the kingdom to which he was heir and fled secretly from his father's palace In the Confucian view he thus contravened two of the cardinal duties of man.

†The office for entertaining guests and embassies from foreign and tributary states. In T'ang China there was no ministry for Foreign Affairs.

Chapter XVII

T'ANG ART

In the Chou and Han periods the foreign influence in Chinese art is never dominant and rarely direct. Native motifs, more or less modified by contact with alien cultures, are in the ascendant, foreign motifs are subordinate and have been transformed by Chinese traditions. The introduction of Buddhism at the end of the Han dynasty, however, brought a new and very powerful foreign influence which not only permeated the religious conceptions of the Chinese, but also imported a great artistic tradition inspired by ideals alien to Chinese thought. As its chosen medium this Buddhist inspiration sought expression in plastic forms, a branch of art which in China had hitherto remained restricted to tomb sculpture.

Buddhist art, when it reached China in the 4th and 5th centuries A D., had already an ancient history in India and Central Asia, where it had been moulded by the Hellenistic influences radiating from the empire of Alexander, his Seleucid successors, and the Roman orient. At Gandhara and Mathura in north-west India Hellenised sculptors, perhaps actually Greek settlers, worked for Buddhist patrons, clothing the Buddha and the Bodhisattvas in the familiar forms of their own classical Mediterranean deities. They were not inspired artists, these Greco-Indian sculptors, but they were competent craftsmen perpetuating a long established tradition, the copying of copies, which reached back to Pergamum and Greece itself They transferred to the Indian religion all the poses and traditional attitudes of Hellenistic art The motifs, such as garlands, and the attributes of the pagan deities of the west, including the trident of Poseidon, appear in the unfamiliar surroundings of Buddhist legend and in the inappropriate hands of the disciples of the Indian teacher.

It was from these Indian centres of Hellenised Buddhism that the religion, and the art, spread eastward across Central Asia until it penetrated China, and later crossed to Japan. The Hellenistic influence, strong and dominant in Gandhara, weakened

as it passed eastward, absorbed many purely Indian characteristics, and, after it had become acclimatised in China, underwent a further profound modification at the hands of artists who had never known the Gandhara and Mathura originals, still less the classical art of the Mediterranean

FIG 48 *Ewer showing Hellenistic motif.*

The Hellenistic spirit was felt, more or less strongly, in all branches of T'ang art, and in the period of the Six Dynasties which preceded the T'ang, but, although many interesting examples of this influence on T'ang pottery exist, such as the ewer, with its classical figure shown in Fig 48, it was the sacred art of Buddhism which transmitted and maintained the new ideas in their purest form. The characteristic medium of this Buddhist art in China during the ages of its ascendency was sculpture. Painting, pressed into the service of religion, always retained a close connection with secular, or rather non-Buddhist, sources of inspiration, Confucian on the one side and Taoist on the other. Sculpture was the peculiarly Buddhist art, and when pictures came to be preferred to

statues in the shrines and monasteries, the force of Buddhism was already in decline.

This fact, the close connection between Buddhism and sculpture, emphasises the alien character of this art in China It was almost always at the service of the Indian faith, and when it derived its inspiration from other sources, such as in the monumental figures, human and animal, which decorated the approach to imperial tombs, it was with certain very rare exceptions, formal, stylised and massive. This indigenous sculpture, now only represented by the figures placed near imperial tombs, can be traced in literary notices at least as far back as the end of the Feudal period. Discussed later in this Chapter, this Tomb sculpture* is here only mentioned to distinguish it from Buddhist sculpture, which alone inherited the Hellenistic tradition

Although Buddhist sculpture was under Hellenistic influence, and declined when that influence and the faith which transmitted it lost vigour, yet the western observer, familiar with Greek and Pergamene work, will find the masterpieces of Chinese Buddhist sculpture unsatisfying and inferior. Hardly any Chinese sculpture is executed as a plastic group, it is intended to be seen from the front alone Physical organic features are not well developed, individual character is hardly ever visible in the treatment of the face. The influence of Hellenistic art appears more in minor ways and in details of motif Chinese Buddhist sculpture has something of the Greek manner but nothing of its spirit. It has, however, another inspiration, not Greek, but Asiatic, and it can be appreciated only in the understanding of this spirit, and not for degenerate traces of Greek style.

The ideals of the Greek and Buddhist sculptor were completely different. The great artists of the classical age in the west expressed more perfectly than any other people the ideal of humanity. To them man was the centre of the universe, their gods were heroic human beings, gods like men. They were concerned to express individual character, and human beauty The Buddhist sculptors of India and China were not interested in these conceptions.

*This name seems appropriate in view of the character of all surviving examples, exclusively associated with tombs. No connection is intended with the clay grave figures which were placed inside the grave

They tried to portray not a god in the form of a perfect human being, but the Buddha, and the essential character of the Buddha, the sign of his Buddhahood itself, was that he had transcended humanity and become entirely detached from all human emotion, and earthly desire

The sculptors who worked at Lung Mên and for the many monasteries of other parts of China, inspired by an ardent faith, succeeded superbly in conveying this ideal of immaculate inhumanity. Their Buddhas are not human, and therefore the physical organism is not stressed. They are not individual, for Buddha is universal, ageless, and beyond desire. He sits in the posture of meditation, calm, aloof, the face subtly illuminated by the smile of all-embracing, divine knowledge. Emotionless and sublime, the discarnate Buddha has no contact with the human race. He has left this earth for ever; he dwells in Nirvana, the absence of striving.

The Indian ideal of renunciation could not for long satisfy the temperate Chinese mind. The violent contrast between asceticism and sensuality which seems to possess Indian art, found no echo in China. After Buddhist art became established in China, and when native artists became the sculptors, the traditional balance and harmony of Chinese taste began to modify the ascetic tradition of India The Buddhas and Bodhisattvas became less ascetic, more human, and less aloof The Chinese no longer made gods who had passed beyond the reach of human desires, but tranquil, reposeful figures who have not so much transcended all human cravings as reconciled and conciliated the clash of desire in a peaceful, harmonious compromise. This expresses an essentially Chinese philosophy, but it is neither Indian nor Buddhist.

The break away from Indian tradition did not lead the Chinese nearer to the western ideals of individuality and humanity in the Greek sense. The Chinese never conceived the supernatural powers in human shape In the earliest religion the representations of the deities were abstract, almost geometrical, symbols of jade. The Chinese outlook in religion was intellectual, and not emotional. The Han Confucianists, when they began to exalt the worship of Heaven above that of the other natural

powers, never personified the ruler of the universe, and never made an image of their deity.

Buddhism, under the influence of Indo-Hellenistic artistic traditions came to China with the convention of sacred images well established To the Chinese it remained something rather alien, reflecting an outlook which was not their own, and with which they never felt at home. Under the inspiration of foreign models, and with the ardour of converts, they adopted the new art and for a time raised it to a high level. It never, however, achieved the perfection attained by other arts, more native to the genius of the race, and the best of the Buddhist sculptors fell far short of the contemporary painting and ceramic art. Under the first impulse this sculpture of the Wei period, neglecting physical form, achieved an abstract but intense realisation of the spiritual meaning of Buddhism When later, under the T'ang, greater interest in technical accomplishment made the Buddhas more human, more graceful and more refined, they lost the spiritual force which makes the earlier sculpture, in spite of its limitations, a great art Tao Hsuan, a scholarly Buddhist monk of the second half of the 7th century, already detected the development which within fifty years was to devitalise Buddhist sculpture. He said of the sculptors of his day that their religious images looked like dancing girls, so that every Court lady came to imagine she resembled a Bodhisattva.

Buddhist sculpture seems to have been almost confined to north China; and, although there are a few pieces which are known to have been made in the Chinese Empires south of the Yangtze,* the material is too scanty to establish a comparison between the styles. It has been suggested that this southern style, transported to Korea by sea, lived on in that country and reappeared in the earliest Japanese Buddhist work † North China, on the other hand, has considerable material from an early date, although neglect and the vandalism of curio seekers has greatly depleted

*At Ch'i Hsia Shan, near Nanking, where there are Sui period rock hewn figures and a marble pagoda decorated with bas reliefs. There is also a similar pagoda, of Six Dynasties date, at Ling Yin Ssu, a celebrated monastery near Hang Chou in Chekiang

†*Chinese Sculpture*. O. Siren. 1925. Vol. I. p. 34

the cave temples which held most of the surviving sculpture Yun Kang, the earliest of these cave shrines, is situated in the north of Shansi province, not far from the city of Ta T'ung Fu, which in the 5th century was the capital of the Wei dynasty, the non-Chinese Tobas, of Tungusic stock

The frequent presence of Indian, Iranian and Hellenistic motifs in these sculptures, the corresponding absence of characteristically Chinese motifs, and the almost total lack of contemporary inscriptions in Chinese, are strong indications that the artists who worked at Yun Kang were not Chinese, but foreigners, most probably Central Asiatics from Khotan and other cities of Turkestan, which were at that time strong Buddhist centres. The Yun Kang sculptures are indeed of more interest as clear evidence of the Buddhist diffusion of Hellenistic influence, than as works of art in themselves. The stone is soft, and has in consequence weathered badly, but the artists were of indifferent quality,

FIG 49 *Hellenistic figure with trident of Poseidon. Buddhist Sculpture at Yun Kang, Shansi After Sirén, Chinese Sculpture.*

copying, without any clear understanding of their purpose, the Hellenistic motifs derived from Gandhara, as for example the divinity bearing the trident of Poseidon (Fig 49). It is the minor figures at Yun Kang, which, by their affinity to Han art in the treatment of the draperies, suggest the presence of Chinese artists, and forecast the rich development which followed when imperial patronage was transferred to a centre where native artistic traditions were strong

At the end of the 5th century the Wei Emperors moved their capital from the frontier city of Ta T'ung Fu to Lo Yang, the old Han capital in the valley of the Yellow River. At Lung Mên, near the new capital, the Wei Emperors, ardent Buddhists, began to construct a new cave shrine, patterned upon the existing grottoes at Yun Kang Here, however, the artists were Chinese, and Chinese cultural traditions were deep rooted in the cradle of her civilisation. The Lung Mên sculptures executed under the Wei, Sui, and T'ang Emperors up the end of the 7th century mark the highest achievement of this art in China ; the culmination of the period being the short Sui dynasty (A D 580-617), particularly the reign of the fervently Buddhist Emperor Sui Wên Ti (A.D. 580-604) The heads of the Sui Buddhas rank with the finest religious sculpture, the supreme expression of the inspiration of the Buddhist faith. The colossal statues shown in Plate VIII are typical of the more vigorous school of sculpture decorating the Lung Mên caves

With the T'ang dynasty, especially during the ascendency of the Empress Wu (A D 650-700) began the period of refinement and humanisation Already the Sui figures are less abstract, more plastic, with less emphasis on line and drapery, than those of the Wei dynasty In the T'ang sculptures these features are still more pronounced Pilgrims who had visited India and Central Asia brought back and popularised the cult of Amida Buddha, less austere and unworldly than the earlier forms of the faith. In response to this tendency in worship art became more human. The feminisation of the treatment of the Bodhisattvas, commented upon by Tao Hsuan, introduced a new, less religious quality into sculpture The gradual transformation of the Bodhisattva Avalokitesvara, the Chinese Kuan Yin, into female form, though

not complete until the Sung period, can be traced from the 7th century. Kuan Yin, the giver of sons, a Madonna-like figure often holding a child, is indeed a later development, but the process which ended in the conception of a divinity so little in accord with primitive Buddhist ideals began with the change of style in sculpture which robbed the Buddhas of their divine detachment from earthly desires.

Religious sculpture had always been an art fostered and sustained by imperial patronage, and when, after the death of the Empress Wu, the Court became more interested in painting and poetry than in sculpture, the decline was swift The Lung Mên sculptors ceased to work, for the Emperor Ming Huang, artist though he was, cared more for Taoism than Buddhism, and more for painting, poetry and music than for sculpture Other influences less direct than a change of religious fashion at Court assisted the decline The Muhammadan invasions of Persia and Central Asia had made the road to India unsafe for Buddhist pilgrims, and had already begun the extermination of the once great centres of the faith situated in what are now the essentially Islamic countries of Turkestan and North-West India. In the 9th century (A.D. 845), the great persecution of foreign faiths, which destroyed Manicheism and Nestorian Christianity in China,* dealt a graver blow to Buddhist art than to the faith itself. Though the monks were secularised and not butchered, the temples and images were destroyed. Buddhism swiftly recovered from this calamity but Buddhist art did not.

Henceforward in the Sung and later dynasties, sculpture sank to the level of a secondary art, devoted to the adornment of temples as before, but lacking the spiritual force which inspired the Wei, Sui and T'ang sculptors to greatness Sung sculptors preferred to work in wood, and, although their work is often charming and sophisticated, it is not the chosen medium of the great artists of the period. This indeed was already the case by the 8th century, for it is recorded of a rival of the great painter, Wu Tao-tzŭ, that, realising his inability to equal the work of that master, he gave up painting and became a sculptor.

The technique of the Han bas-reliefs was also used by the

*See Chapter XVI.

FIG 50. *Part of a relief representing the dedication of a Buddhist ten Wei period. Dated A.D. 525*

Buddhist sculptors of the Wei period, although the style was modified to suit religious subjects. The relief illustrated in Fig. 50, which is of particular interest since the associated inscription dates it to 525, is characteristic of the Wei style. The scene represents the dedication of an altar by an official accompanied by two attendants and umbrella bearers A groom, wearing the typical Wei hose, leads the official's horse, which is protected on the neck and shoulders by an elaborately decorated harness of what may well be moulded leather to judge from pottery specimens in the Eumorfopoulos collection.

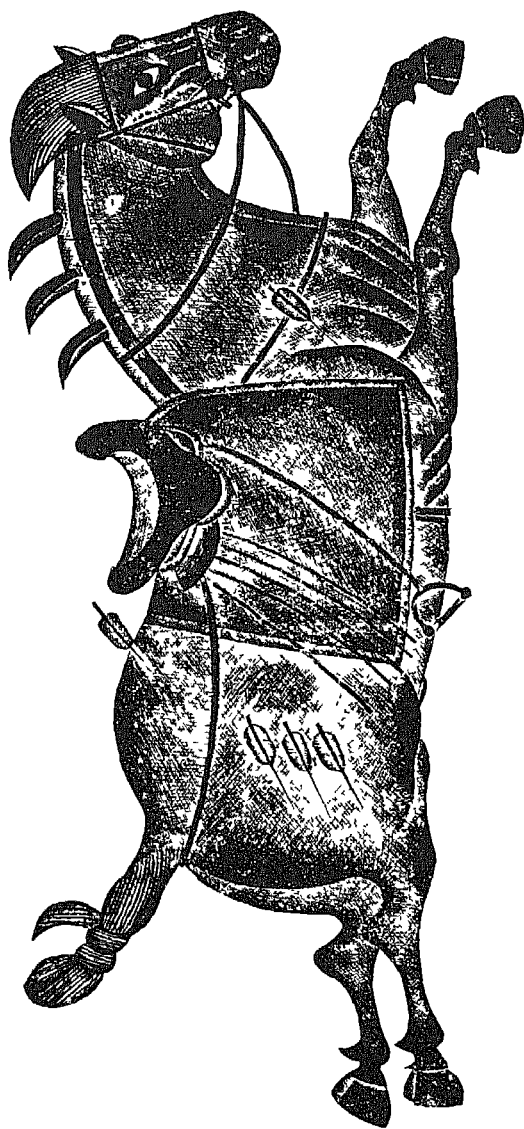
The fact that there existed a native, non-Buddhist sculpture in China has already been mentioned This art was older than the Indo-Hellenistic tradition which informed Buddhist work, but though colossal figures in bronze and stone are mentioned in Han literature very little survives from this age. All existing non-Buddhist sculpture is found at tombs, usually at those of Emperors or princes Although some pieces found at An Yang attest the antiquity of this art, it would seem, from the few surviving works of Han date, that a marked change in style occurred at the end of the Feudal Period. The Shang pieces are conventional and decorated in the manner of the Shang bronzes The Han and later figures are massive works executed in the round, representing animals or standing human figures, such ornament as there is being a naturalistic rendering of harness or armour. The art was continued up to modern times, indeed is still alive, the latest examples being the lions adorning the approaches to the Mausoleum of Sun Yat Sen at Nanking. Though never lacking a certain heavy dignity, the later examples are formal and rigid

The figures which guard the tombs of the emperors were both human, representing civil and military officials, and animal, very often lions, but also fabulous beasts, griffins and winged monsters. The treatment of the human figures is inferior to that of the animals, and this in itself suggests that tomb sculpture derived inspiration from an Iranian source and owed nothing to the Indo-Hellenistic current.

Tomb sculpture as a whole is monumental, heavy, and lacking in vitality. The principal piece dating from the Han period, a horse trampling the figure of a Hsiung Nu (Hun), which adorns

FIG. 51. *Winged Lion from Liang Tombs, Nanking.*

the tomb of the Emperor Wu's cavalry general, Ho Ch'u-p'ing, is more important as a historical monument connected with this well-known personage than as a work of art. It has, indeed a certain massive brutality which is not inappropriate in a memorial to a general of those ferocious wars. Compared to this group the winged lions which guard the sepulchres of the Liang princes, near Nanking, mark a great advance (Fig. 51) These monuments, which were no doubt erected at or shortly after the death of these princes (A D. 518-522), are not intended to be faithful representations of real lions The lion is not native to China, and the living animal was only occasionally presented as a gift by embassies from western Asiatic states

Chinese lions were heraldic beasts on which the artist could freely exercise his imagination The Liang lions, winged, with slender bodies and huge sunken heads, gaping jaws and lolling tongues, are embodiments of tense energy, inspired by that vigorous sense of line which distinguishes the animal style in Scythian art. It is probably from this source that all the best tomb sculpture drew its strength. There is a certain corre-

IG 52 *One of T'ang T'ai Tsung's six chargers. Drawing from the bas-relief Sianfu, Shensi*

spondence between the Chinese guardian beasts and the winged monsters of Persian and Assyrian art, and it is very probable that the custom of making such monuments, and in particular the frequent use of the non-Chinese lion, was a consequence of contact with Parthia in the Han period.

Guardian figures of this kind may have been made for the tombs of the emperors who followed the Liang dynasty at Nanking, and perhaps in the north also, but if they ever existed they have disappeared. The T'ang dynasty, revived, or continued the custom It was for the tomb of the second Emperor of this house, the great T'ai Tsung, that the finest surviving works of Chinese tomb sculpture were made. The bas-reliefs of the Emperor's six chargers stand in a class apart. According to tradition they were executed from the designs of the celebrated painter, Yen Li-pên, who had perhaps painted the living horses themselves It is easy to believe that they were in fact the work of a great artist, and the use of bas-reliefs, unusual in Tomb sculpture, suggests that the sculptor was working from the drawings of an artist who was not at home in the plastic arts Unlike the heavy figures found at other imperial tombs the six chargers are spirited and vital portraits of horses of the short, stocky, Mongolian breed (Fig 52), such as are still in common use all over North China.*

T'ai Tsung was a great lover of horses, and it is likely that he had commissioned Yen Li-pên to design his monument before he died. The unusual nature and high quality of the work is not found in the later T'ang tombs, or in those of the Sung Emperors. The figures which surround their sepulchres are in every way inferior, apparently the work of stonemasons rather than sculptors. The two bas-reliefs of ostriches at the tomb of the third T'ang Emperor, Kao Tsung, alone deserve mention, both because they are competent works of art, and also because of the unusual subject These reliefs, perhaps designed from living birds presented by a Persian embassy, are faithful representations of the ostrich, unlike later Chinese pictures of the bird, which bear

*The six reliefs have now been saved from the ruin of the Emperor's tomb at Li Ch'uan in Shensi. Four of them are preserved in the Shensi Provincial Museum at Sianfu (Ch'ang An), the other two are in the University Museum at Philadelphia Casts of this pair are in the British Museum.

little resemblance to reality, and were evidently made by artists who had never seen an ostrich.

The low level of all T'ang and Sung tomb sculpture, the six chargers of T'ai Tsung excepted, is the more remarkable when it is remembered that these periods excelled in other arts, painting, ceramics, and metal working. There was something alien to the Chinese genius in sculpture in stone. Great works of art in this medium were produced only under the stimulus of an alien tradition, like the Hellenistic influence in Buddhist sculpture, or under the borrowed inspiration of an artist who was primarily a painter, as in the reliefs of the six chargers. Ordinarily the best artists did not become sculptors, perhaps because, being trained from childhood in the use of the brush for calligraphy, they turned naturally to the kindred art of painting, and felt that the hammer and chisel were not appropriate tools for a man of culture.

Stone sculpture was entirely at the service of Buddhism and the Court, by which this art was encouraged and sustained. Buddhism, however, even in the centuries of its vigour, never displaced the ancient and enduring native religion of China, ancestor worship, or more properly the cult of the dead. For this popular cult another plastic art, that of the pottery figures, was perfected, until in the T'ang period it far surpassed the sculptures of Lung Mên or the imperial tombs. This art, and the religion which it served, needed no imperial patronage, and received no recognition in literary records. It was popular, universal, taken for granted by the men of that age, and therefore testifies better than any other product of the T'ang period to the innate artistic sensibility of the Chinese people.

The high æsthetic quality of many of the grave figures produced in such quantities during the T'ang era is now well known to the west through the many examples which have been excavated in recent times and exported to Europe and America Probably the modern world is better able to judge their quality than any other age, for it is a strange fact that these beautiful and graceful figures, executed with so much feeling and care for detail, were never intended for the pleasure of living men. They were made only for the service of the dead, and were sealed, as their creators hoped, for ever, in the darkness of the tomb. The grave figures

were made and used in all parts of the empire. Those from tombs in Szechuan or from the lower Yangtze are as fine as the figures recovered from graves near the capital. So far as is known they were not the work of artists of great reputation, indeed their names are unrecorded, yet at their best their work far excels any other plastic art produced in China *

The grave figures possess all the qualities which Buddhist and tomb stone sculpture lack They are conceived in the round, not only to be seen from the front, they are full of life and movement, graceful, intimate, human and individual It is obvious that the craftsmen who made them were seeking ends very different from the Buddhist sculptor, even if it be admitted that they worked in a more tractable medium To appreciate the significance of the grave figures it is necessary to consider what was the inspiration and motive which guided their makers. The Buddhist sculptor, endeavouring to make an abstract image of a divinity, minimised rather than accentuated the humanity of his figures; the maker of clay figures, on the contrary, set himself the opposite task.

He was not consciously making a work of art to be admired by living men, and he was not making an image of a divinity His clay figures were objects of magical significance, intended for the use of the deceased in the after life In the tomb these figures would become transformed into animated, spiritual counterparts, serving the dead man as the living models upon which they were based had served him on earth The wealthy Chinese of the Wei and T'ang periods were surrounded in death with dancing girls, servants, guards, grooms, actors and concubines Horses and camels, with their foreign grooms and drivers provided for his long journeying in the spirit world Models of houses and inanimate objects of all kinds assured him of the same degree of comfort in death as he had enjoyed on the earth. Nothing could be omitted, for unless a model was placed in the tomb, the spiritual counterpart would not exist in the after life.

The figurine of a soldier with a long body shield is of the slatey

*The magnificent life-size pottery figure of a Lo Han in the British Museum is, of course, Buddhist. It is, however, akin in feeling to the grave figures rather than to Buddhist stone sculpture

coloured (Fig 53) clay regarded as typical of grave figures of the Wei period. Another common type wears scale armour and often a quiver Both types exhibit the typical Wei hose bound below the knee

The aim of the maker of clay figures was therefore to give his work life and realism. The more perfect his image the more serviceable it would be to the spirit of the deceased in the after world. Consequently, the skilful artist tried to inspire his work with the very qualities that the Buddhist sculptor tended to ignore. He was not concerned to portray spiritual feeling, abstract wisdom and divine detachment. Tao Hsuan's comment illuminates the attitude of Buddhists towards sculpture. Realism and humanity were a defect. The maker of clay figures, however, was trying to copy the human original as nearly as he could.

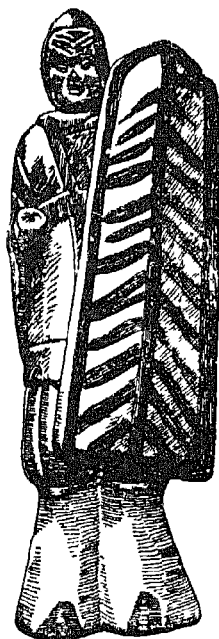



FIG 53. *Pottery figure of a Wei warrior*

In this task the artist succeeded admirably The grave figures reveal, more perfectly than any literature, the social life of that time The fashions in dress, the type of feminine beauty then admired, the armour of soldiers and the style of dancing, all are shown with faithful attention to detail, and astonishing vitality Even more interesting is the great variety of racial types represented. Nothing could prove more conclusively the international character of the T'ang age, and the intimate contact which then existed between China and distant countries. It was evidently a commonplace for the wealthy Chinese to employ Central Asiatics as grooms and camel drivers, Indians as jugglers, Syrians and perhaps even Greeks as singers and actors. We may add that the frescoes at Bazaklik in Chinese Turkestan show Buddhist monks with brown hair, European features and blue or green eyes *

*A v Le Coq *Chotscho*. Berlin. 1913 Plates 17 and 21.

These foreigners are portrayed with such accurate attention to the facial types and style of dress as to make their identification beyond question. The armenoid faces of the camel drivers, the high boots and fur-lined coats of the Mongolian grooms, the curly hair and toga-like garments of the Syrian singers and musicians, are all faithfully rendered. Dwarfs were evidently popular as entertainers, and examples are not lacking of slaves imported from the primitive peoples of southern India. The figure in Plate IXA is possibly a pre-Dravidian tribesman from one of the jungle peoples of the south, or he may be a *mahout* brought back by one of the T'ang ambassadors to an Indian king.

Figure B of Plate IX is that of a man of marked armenoid type, perhaps a Central Asiatic He is wearing a Phrygian cap and riding boots, and is apparently training a small bird. His heavy beard, whiskers and moustache, and the very prominent nose are probably slightly exaggerated, as these features always strike the hairless Chinese as strange or comic, as can be seen to-day in the illustrated Chinese press. Some of these figures, of which this is a good example, seem to be actual portraits modelled from life.

It is quite possible that wealthy men had their favourite singers and dancers copied in clay from the life, so that when they came to die they should still enjoy the entertainments which had pleased them on this earth It is obvious that the T'ang Chinese were keenly interested in foreign peoples and closely observed their national peculiarities of feature and dress, and foreigners must have been numerous in the households of the wealthy.

All this observation, skill and artistic feeling, were spent upon an art which was never intended for the living, which remained almost forgotten until modern times, and which is ignored by the literature of the period The Chinese from the 5th to 10th centuries developed a plastic art of the highest quality, and buried it in their graves The fact perhaps provides the key to the neglect of the plastic arts in secular life. Sculpture was abstract and Buddhist, the clay figures, realist and human, were designed for the tomb, and this association made them improper and ill-omened as a decorative art. Representations of the human figure in clay were too closely connected with ideas of death and burial

to be appreciated on artistic grounds, and when centuries later a change of custom, probably brought about by economic causes, replaced the clay grave figures by paper images which are burned at the funeral, the artistic tradition of the workers in clay died out.

The frequent representation of foreign types among the clay figures confirms the fact, known from historical records, that there were large colonies of foreigners resident in China during the T'ang period There were Persians, Indians, Turks and Central Asiatics at Ch'ang An, the capital, and also a considerable settlement of Arabs, Jews and Indians in the chief ports of the south-east coast Probably, with the exception of the short-lived Mongol dynasty, there has been no period until modern times when China was in such intimate contact with so many alien peoples. Unlike the Mongol period, however, when the foreigner was in the service of an enemy conqueror, the strangers who came to China in the T'ang dynasty were merchants, mercenary soldiers or religious missionaries; in fact, very much the same type of traveller as the foreigners resident in China at the present day.

It would be strange if this peaceful invasion had not left traces of foreign culture in the art of the period, and as many T'ang works prove, there was, in fact, a strong foreign element in the motifs employed in the decorative arts. The marble bowl illustrated in Plate X which may be attributed to the T'ang period, although it was found at K'ai Fêng Fu, a Sung city, is a striking testimony to the force of this foreign influence. The design of children with vine boughs and bunches of grapes which encircles the side of the bowl is, of course, so familiar as to be hackneyed in the classical and renaissance art of the west It has no relation to Chinese tradition or culture; the grape, though well known as a fruit, is not commonly employed to make wine in China, and the whole train of Dionysian associations is therefore lacking. This bowl was nevertheless made in China, as the Mongolian features of the children prove, and is not either an importation from the west or a very accurate Chinese copy. The Chinese of that period were attracted by the foreign motif, but they modified the human type to accord with their ideas of beauty, just as, some centuries later, Europe adopted the "willow

pattern"—said to be originally derived from Chinese pictures of the West Lake at Hang Chou—and westernised that famous landscape into an 18th century water garden.

In bronze work the T'ang artists were carrying on an old traditional art in which completely exotic motifs might have seemed unsuitable. Nevertheless, there is a new importance accorded to floral themes, side by side with the antique dragon and phœnix The use of flower patterns in bronze work, as on one of the mirrors shown in Plate XI, marks a change from the geometrical and symbolical motifs of the Han period. The dragon and phœnix themselves are treated with a new freedom, particularly in the graceful lines of the bird's wings and tail feathers, well shown in the descending phœnix illustrated in Fig 54, a bronze masterpiece of the T'ang period.

FIG. 54 *A phœnix in flight. Bronze T'ang Period.*

PART FIVE—THE SUNG DYNASTY

Chapter XVIII

THE SUNG MONARCHY

FIFTY-THREE years of partition and anarchy followed the final extinction of the T'ang dynasty in A D. 907 This period is known in Chinese history as that of the "Five Dynasties," so called from the ephemeral military dictatorships which controlled the provinces of North China The five dynasties were the

Later Liang, A D. 907-923, seventeen years,
Later T'ang, A D 923-936, fourteen years,
Later Tsin, A D. 936-947, twelve years,
Later Han, A.D 947-951, four years,
and Later Chou, A.D 951-960, ten years

The "emperors" of these short-lived lines were military adventurers mostly of barbarian stock who had risen to high commands in the chaos following the rebellion of Huang Tsao (Chapter XIII, p 306). Short though the duration of these dynasties was, the government was in reality more chaotic than would appear from this list, for these brief periods were distracted by civil wars, the succession to the throne was determined only by force, and was usurped by distant relatives of the deceased Emperor, if they had more armed support than closer heirs Thus, the so-called Later Liang house really covers the reign of four rulers who belonged to three different families, only loosely connected by adoption Similar conditions prevailed in the other periods, which are only described as "dynasties," because Chinese political terminology lacked an expression for what was really an interregnum of successive dictatorships

These governments were only acknowledged by a few of the northern provinces of the eastern plain; south and west China lay outside their authority At the end of the T'ang dynasty the provinces furthest from the Court had already become virtually independent under hereditary governors paying a nominal allegiance to the shadow emperors in Ch'ang An. When Chu Wên, founder of the Later Liang, dethroned the last T'ang Emperor and exterminated the princes of the imperial family, these distant governors repudiated his authority and became rulers of

independent states, styling themselves kings or emperors in accordance with their power and the extent of their territory. The Chinese historical convention which recognises the ruler of the largest territory as true Emperor is the only justification for classing the five dynasties as legitimate lines, and ignoring the claims of the southern kingdoms which, as a matter of fact, were both better governed and far more stable

It was in these states (Map 11), which for the most part refrained from wars either among themselves or against the rulers of the

MAP 11. *China in the Five Dynasties Period.*

north, that the culture and literature of the T'ang period was preserved in this dangerous period of confusion. Shu, or Szechuan, was distinguished by its poets and scholars, fugitives from ruined Ch'ang An Nan T'ang (Southern T'ang) which covered the modern provinces of Anhui, Kiangsu and Kiangsi—the lower Yangtze basin—was a refined state, well and pacifically ruled by sovereigns who were strong patrons of Buddhism Hunan, the kingdom of Ch'u, remained tranquil throughout this distressed period. Canton was the capital of the rich kingdom of Southern Han (Nan Han) covering the two provinces of Kuangtung and Kuangsi The eastern coast was divided between two states, Min in Fukien, and Wu Yueh in Chekiang A small region between the Han and Yangtze Rivers in Hupei formed the diminutive state of Nan P'ing, which by wise policy avoided all conflicts with its greater neighbours. In the north-western provinces of Shansi and Shensi less durable kingdoms rose and fell as the authority of the sovereigns of the Five Dynasties fluctuated.

The detailed history of this confused age is of no importance, but one or two events which were to decide the character of the period to follow, deserve mention. The first ruler of the Later Tsin dynasty (A D. 936), a Turkish adventurer who owed his throne to the assistance of the nomad Kitans, ceded to that nation, as the price of their support, the north-eastern corner of the Chinese plain, the territory from Peking to the Great Wall, including the city of Peking itself (then called Yen), and the passes through the Yin Shan mountains which separate Mongolia from the Hopei plains The nomads thus obtained a footing on the plain, a strategic starting point giving easy access to invasion of the south. Here was the first cause of the nomad conquests in China which paved the way for the Mongols.

The same first ruler of the Later Tsin moved the capital from Lo Yang to a new city, K'ai Fêng Fu, which had never hitherto been capital of the empire K'ai Fêng had the advantage over Lo Yang and Ch'ang An in the ease of communications by river and canal, for it stands in the midst of the northern plain, some miles south of the Yellow River. The facility with which it could be provisioned was offset by the fact that it lacked any natural

strategic strength, and was therefore exposed to the attacks of nomad cavalry This fact was of importance in determining the policy of the Sung sovereigns who retained K'ai Fêng as capital.

The only important event in the history of literature during the Five Dynasties was the printing of the Classical Books, now undertaken for the first time. Printed books had begun to appear in the later years of the T'ang dynasty, but no printed edition of the classical collection had been attempted. The cutting of the blocks was begun in A D 932, but the printing was not finished until A.D. 953, no doubt delayed by the troubles of the times. The printing of the classics had an important influence on Chinese thought. For the first time the supply of books became cheap and abundant Scholars multiplied and the knowledge of literature was spread more widely through the nation. The consequences of this expansion of the literate class was to be manifest under the Sung dynasty.

The Sung dynasty, under which the Chinese lands were reunited in the third centralised empire (A.D. 960) differs in many respects from its predecessors the Han and the T'ang. The manner of its foundation, the extent of its authority, its internal and external policy, and not the least the factors which in the end destroyed it, are peculiar to it. Unlike the Han and the T'ang, the Sung reunion of the empire was the work of policy rather than conquest, an almost peaceful submission of a nation weary of disunity and now fully conscious of its cultural identity. The Sung were chosen by consent, and they ruled by general acquiescence, hardly troubled by any formidable rebellion such as had shaken the thrones of the Han and T'ang emperors The enemies of the new dynasty were not found in the empire, but among the powerful alien races who in turn dominated the northern steppes

Chao Kuang-yin, founder of the Sung dynasty, was a northerner, scion of an official family from Cho Chou, a city forty miles south of Peking. His immediate forbears had been civil officials and governors under the T'ang Emperors and their successors of the Five Dynasties The future Emperor himself was a general who had won distinction under the second Emperor of the Later Chou dynasty, who, dying in A.D 959, made the mistake of transmitting his throne to a young child, under the regency of

the Empress. Chao Kuang-yin was then sent north with the army to repel a threatened invasion of the Kitans. The officers and soldiers of his army were discontented at this order, for they believed that with an infant on the throne and power in the hands of an Empress and her Court, their services would be unrewarded and promotion denied to them

When the army had moved a few days' march from the capital a mutiny occurred, inspired by the chief officers, though not by Chao Kuang-yin At dawn their leaders entered his tent with drawn swords and forcibly robed the half awakened general in a yellow gown, the symbol of imperial authority. Chao Kuang-yin* was then unwillingly presented to the army as the new Emperor. Forced into rebellion, the general was under no illusions as to the motives of his supporters Before marching on the capital he frankly told them that he realised that their actions were inspired not by admiration for him, but by self-interest, and he refused to accept the position thrust upon him unless they would take an oath to obey him in all matters. This given, he ordered that no harm should be done to any member of the imperial family, to the ministers and officials of the capital, or to the inhabitants.

He was obeyed, and the army occupied the capital without disorder, for the Empress Regent bowed to the inevitable. Such revolutions had been the commonplace of politics under the Five Dynasties, and there was nothing to suggest that the Sung dynasty would be more respected or permanent than its predecessors. Chao Kuang-yin, however, was not the man his soldiers had supposed him to be Once on the throne he consolidated his position by a series of skilful political moves He spared the fallen family of the Later Chou, conciliated the civil officials by restoring the dominant position of the civilian element in the government, and lastly his masterstroke was to get rid of the army which had raised him to the throne, and might so easily elect another candidate. The measures he took to achieve this reveal the character of the man, and explain why it was that in an age of

*This incident, so strongly reminiscent of the military revolutions of Imperial Rome, is unique in Chinese history, and far removed in time from the numerous similar events in Roman history.

strife and treachery he commanded the respect and confidence of all classes

In the first year of his reign the new Emperor summoned all his military officers—the men responsible for the mutiny to which he owed his throne—to a banquet. When the company had drunk deeply and were in cheerful mood, the Emperor said:

"I do not sleep peacefully at night"

"For what reason?" inquired the generals

"It is not hard to understand," replied the Emperor. "Which of you is there who does not covet my throne?"

The generals made a deep bow, and all protested:

"Why does Your Majesty speak thus? The Mandate of Heaven is now established; who still has treacherous aims?"

The Emperor replied.

"I do not doubt your loyalty, but if one day one of you is suddenly roused at dawn and forced to don a yellow robe, even if unwilling, how should he avoid rebellion?"

The officers all declared that not one of them was sufficiently renowned or beloved for such a thing to happen, and begged the Emperor to take such measures as he thought wise to guard against any such possibility. The Emperor, having brought them to this point, promptly made his proposals known:

> "The life of man is short," he said "Happiness is to have the wealth and means to enjoy life, and then to be able to leave the same prosperity to one's descendants If you, my officers, will renounce your military authority, retire to the provinces, and choose there the best lands and most delightful dwelling-places, there to pass the rest of your lives in pleasure and peace until you die of old age, would this not be better than to live a life of peril and uncertainty? So that no shadow of suspicion shall remain between prince and ministers, we will ally our families with marriages, thus, ruler and subject linked in friendship and amity, we will enjoy tranquillity."

The officers and generals immediately vowed to follow the Emperor's wishes, and the next day, pretending imaginary maladies, all offered their resignations. The Emperor accepted

heir offer, and carried out his part of this strange bargain. All were given titles of honour and richly endowed with wealth and and. In this way the founder of the Sung broke the vicious circle of suspicion and mutiny which had kept the government in a state of turmoil under the Five Dynasties That such a plan was possible, is perhaps the highest tribute to the character of the new Emperor, and proves him to have been a man in whose word everyone reposed a perfect confidence

There can be little doubt that the general respect felt for the integrity of the new ruler of the Sung was an important contributing factor in the rapid and almost bloodless reunion of the independent parts of the empire Some of these states, such as Nan P'ing (Hupei) and Shu (Szechuan) submitted without any resistance, and as in the case of the deposed Emperor of the Later Chou, their rulers were not only spared, but allowed to live in honourable freedom at the Sung capital The two largest southern principalities, Nan Han (Canton) and Nan T'ang (the lower Yangtze provinces) offered a half-hearted resistance which was speedily overcome. They capitulated in A.D 971 and 975 respectively Their rulers were brought to K'ai Fêng, where they were permitted to reside at the Court.

The submission of the last independent states, Wu Yueh (Chekiang) and the Northern Han (Shansi), was not received until A D. 978-79, three years after the first Emperor of the Sung had been succeeded by his brother, the Emperor T'ai Tsung The choice of this Prince as successor was due to the wise advice of the Empress mother, an old lady of shrewd intelligence When she lay dying she insisted that the succession be settled in this way, and when asked her reasons, said to her son: "Why do you suppose that you have obtained the empire?" The Emperor replied in the conventional terms that he owed his throne to the wisdom and virtue of his ancestors, and of his mother herself in particular The Empress would not hear of this explanation

"Neither I, nor your ancestors have anything to do with it," she answered. "The only reason that you are on the throne to-day is because the late Emperor of the Later Chou was so foolish as to nominate a young child as his successor. If you are succeeded

by a child, our dynasty will suffer the fate that we meted out to them"

She might have added that another and potent reason for the rapid success of the Sung dynasty was the universal desire for peace and unity The Chinese people were now fully conscious of their common culture and racial affinity The revived feudalism of the Five Dynasties was decried by all as a senseless retrogression; the united empire was accepted as the only reasonable and proper form of government This sentiment is well illustrated by the reply which Chao Kuang-yin made to the King of Nan T'ang, who, when threatened with war unless he submitted, offered to hold his state as a feudal domain under the Sung Empire. "What crime has the land south of the River committed that it should be separated from the empire?" was the Emperor's only comment on this proposal.

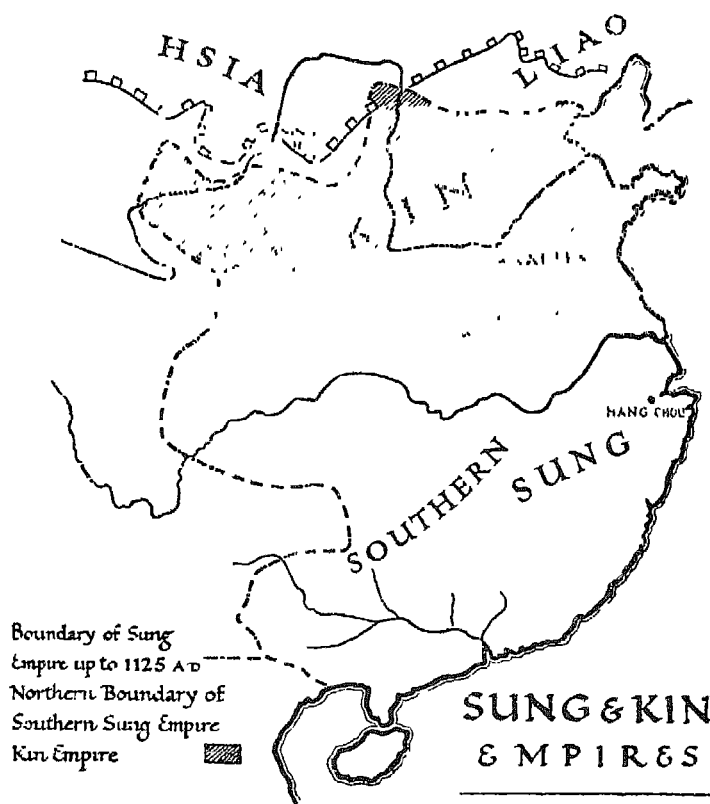
If the Chinese states and provinces welcomed the Sung Empire with relief and joy, the nomad races to the north were not disposed to yield up their conquests without a struggle When the second Emperor of the Sung endeavoured to regain the lost territory between Peking and the Great Wall, he was met by the Kitan army and disastrously defeated near Ch'ang P'ing, north of Peking. Subsequent Chinese successes prevented the Kitans profiting by this victory, but it set a limit to the Sung Empire which was never exceeded The war dragged on for some years until the third Sung Emperor, Chên Tsung, made a firm peace with the enemy, yielding up his claim to the lost territory, and also paying the Kitans a large annual subsidy, which they might well regard as tribute (A.D 1004).

The acceptance of what the T'ang or Han Emperors would have regarded as a shameful peace was characteristic of the Sung, for whom pacifism was the guiding rule of foreign policy. The Sung period indeed marks a definite change in the character of the Chinese government. Just as the internal troubles of the empire had been settled by a policy of conciliation and clemency unheard of in the past, so the empire from the first renounced the imperialism which had been so prominent a part of the Han and T'ang policy. The founders of those dynasties had ruthlessly exterminated their internal rivals, and then actively pursued a

policy of conquest in the north and west. The Sung not only spared the rival princes of the southern kingdoms in China, but never made any attempt to extend their empire beyond the Great Wall.

The empire they founded was therefore more restricted in area than its predecessors Not only was the north-east left to the Kitans, who also ruled over Manchuria and the part of modern Shansi lying north of the Great Wall; but the north-west, the "arm" of Kansu province which commands the route to Central Asia, together with the territory north of the great bend of the Yellow River (now Ning Hsia province in the former Inner Mongolia), was outside the Sung domain This region came under the rule of the Tibetan-Tangut kingdom of Hsia, which endured until the Mongol conquest The Sung were thus cut off from the traditional land route across Turkestan to western Asia and Europe. (Map 12)

The Empire of the Sung, although thus confined to strictly Chinese territories, soon became more populous than the T'ang Empire had been at the height of its power. This rapid increase in the population was partly caused by the growing importance of the southern provinces, and fostered by the peaceful policy of the Sung sovereigns The Sung were never threatened by internal rebellions of any importance No An Lu-shan or Huang Tsao arose to devastate the empire, and the fact is good proof of the efficiency and humanity of their rule, a truth attested by other evidence The ministers of the Sung Court who fell from power, or who were disgraced, were not put to death, a fate which had almost invariably attended their predecessors under the Han and T'ang. The fallen ministers of the Sung were sent to govern some minor city in a remote province, and this new clemency was one reason why the internal politics of the Sung period were more constitutional than had ever been the case in previous ages. There arose two parties in the state, Conservatives and Innovators, who strove to enforce opposite policies, but who carried on their warfare with pens rather than with death sentences.

The internal administration was patterned upon the T'ang centralised government, but the civil service under the Sung was even more thoroughly organised and better controlled than before.

MAP 12. *The Sung and Kin Empires*

The examination system was now well established To enter the civil service the candidate had to submit to a carefully supervised public examination in various subjects—subjects which formed one of the principal points at issue between the two parties who disputed the policy of the empire This development tended to raise the prestige and confirm the power of the civil officials, who throughout the Sung period were dominant, relegating the generals and military officers to the inferior status which was henceforward their lot in Chinese society. It was a change very much in accordance with the prevailing pacifist feeling, characteristic of Sung policy

The empire itself was divided into new provinces, more numerous than the ten T'ang *tao* The number varied during the course of the dynasty, and the increase no doubt reflects the rising population of the empire. The Sung provinces, called *lu*—circuits or routes—were at first fifteen in number, but were finally increased to twenty-five, the large areas which T'ang T'ai Tsung had included in one province, especially in the south, being now split up into two or more separate provinces by the Sung The number of prefectures (*chou*) was 321; of sub-prefectures (*hsien*) 1162. If these figures are compared with the T'ang census of A D 754 (p 312) it will be seen that while the number of prefectures was the same, the Sung *hsien* were considerably fewer. The decrease is partly explained by the smaller area of the Sung Empire, but also to changed administrative boundaries

On the other hand the empire, though smaller, was far more populous. In 1083 a census gave the number of families, both Chinese and foreign, resident in the empire as 17,211,713, approximately ninety million souls In A D. 1124, after more than a century of internal peace, when the Sung Empire was on the eve of the Kin Tartar invasions, a census gave the population of the twenty-six provinces as.

Prefectures (*chou*)	254
Sub-prefectures (*hsien*)	1,234
Families	20,882,258

or approximately more than one hundred million souls It will be noticed that the number of prefectures had been reduced and the sub-prefectures increased, probably an administrative change, as the empire had not then lost any territory.

The peace of A D. 1004, which settled the common limits of the Sung Empire and the Kitan kingdom of Liao, remained unbroken except for minor border troubles in the north-west for more than a hundred years. This century, which almost exactly coincided with the 11th century of the Christian era, was an age of culture and refinement, famous for its intellectual activity and artistic development In the opinion of many, the Chinese civilisation reached its apogee in these years, and in later centuries never recovered the level to which the Sung had attained. This view is necessarily one of personal taste, and is perhaps too much

coloured by a high regard for Confucian philosophy as re-shaped by the Sung scholars, and an unjustifiable disregard of the literary forms in which the genius of later ages found its expression. Nevertheless the Sung was one of the greatest ages of Chinese culture, and the credit for the peace and order in which this civilisation flourished is due in large measure to the five able and original personalities who ruled over the empire. These five emperors have been much maligned both by Confucian historians and by European writers who have either adopted the prejudices of their Chinese authorities, or imported their own *

Chên Tsung (A.D 998-1022), the third Emperor of the Sung and nephew of the founder, was responsible for the peace with the Kitans, and has been abused by those historians who consider that the risks of a desperate war against a barbarian enemy were to be preferred to an unfavourable treaty, which none the less secured the integrity and prosperity of a great empire They disliked his religious policy, and his deliberate encouragement and invention of new cults, designed to fuse the rival Buddhist and Taoist religions. He is accused of having deceived the empire by claiming divine revelations which were in fact entirely fictitious. The attitude which treats Chên Tsung's "revelations" as a practical joke in poor taste, is quite uncritical, and ignores the problem which the Emperor was endeavouring to solve.

Chên Tsung deserves the credit of realising that his throne needed a stronger moral title than that of election by a mutinous army. The new dynasty needed some quality which should distinguish it from the dreary sequence of military despotisms known as the Five Dynasties An Emperor to command the respect of his subjects must be either general or priest The Sung were pacifists, and as the war with the Kitans had proved, Chên Tsung stood little chance of acquiring the reputation of a military hero He therefore decided to appear in the eyes of the common people as the divinely accepted ruler, whose authority had been confirmed by the special revelation of Heaven The Confucianists

*The Confucian historians, who all belong to the finally dominant school of the Conservatives, followers of Ssŭ-ma Kuang and Chu Hsi, have no word of understanding or sympathy for the emperors who did not happen to favour their patrons P Wieger, *Textes Historiques*, has scant sympathy with the artistic temperament and exhibits the marked religious bias of a Catholic missionary.

complain that no man of education was deceived by his missives which fell from Heaven, the divine messengers which appeared to him in the night, and other devices The Emperor probably never supposed that scholars would be deceived, nor cared whether they were His object was to impress upon the common people that his family were the chosen of Heaven, not to be confounded with the common run of usurpers of which the empire was so weary That he succeeded is evidenced by the unbroken internal peace which prevailed under his line.

Jên Tsung (A.D. 1023-1063) has been better treated by the historians because he was a more orthodox Confucian and patronised the celebrated scholars, Ssŭ-ma Kuang and Ou-yang Hsiu, who were the leaders of the Conservative party. In consequence Jên Tsung has been highly praised by the followers of this party, who wrote the history of his times It was during his long reign that the two opposing political and philosophic parties developed into clearly distinguished factions, which, during the rest of the Sung dynasty, disputed with equal fervour for their own particular interpretations of the classical books, and for the actual political control of the empire This alliance of scholarship and politics is characteristically Chinese, and characteristically Sung It had far-reaching results, for the aftermath of this long struggle has coloured the history of the past, which has until modern times been interpreted in accordance with the ideas of the Conservative school, who ultimately triumphed It led also to that rigid orthodoxy which excluded from polite literature any mention of the opposing schools of thought, relegated religion to the common people as "superstition" and shut its mind against any innovation or adaptation of alien ideas These consequences of Sung Conservative scholarship did not appear in the Sung period itself, but their origin lies in the doctrines taught by this school.

The successor of Jên Tsung was Ying Tsung, who reigned only three years, and was followed by Shên Tsung (A.D 1068-1085) under whom the Conservatives were dismissed from office, and the ministry conferred upon their arch-enemy, the innovator Wang An-shih, one of the most original minds in Chinese history, whose economic and social theories, so close to ideas now current,

must be made the subject of another chapter. Throughout the reigns of Shên Tsung and his two successors, Chê Tsung (A.D. 1086-1100) and Hui Tsung (A.D. 1100-1125), who was an artist of great merit, the Innovators were more or less consistently dominant in the empire, and in consequence the memory of these sovereigns has been blackened by historians of the opposite party.

These emperors, tolerant, humane, artistic and intellectual, free from the vices which have so often disgraced Oriental monarchs, were the most enlightened sovereigns who ever ruled in China. There was then no aura of orthodoxy about the doctrines of the Conservative scholars, doctrines which were in fact not truly Conservative at all, but merely one of two or more interpretations of the ancient literature then current. The Sung Emperors favoured sometimes one school and then another, not so much on account of their philosophic teaching as by reason of their ability in actual administration. That they chose their ministers—whether Innovators or Conservatives—wisely, is proved by the admitted prosperity of the empire, the absence of popular rebellions, and the rapid rise in the population.

Unfortunately, the Sung were too civilised for the world of the 11th century. While they debated matters of literature, economic theories and political philosophy, rude nomads of the Mongolian steppe were coalescing into formidable states, organised for war. The Kitans who had founded the Liao state, lying north of the Sung Empire in Manchuria, Jehol and Inner Mongolia, had quickly adopted the civilisation of their great neighbours. They borrowed Chinese customs, gave up their nomad life for the comforts of cities and fixed dwellings, learned the language and studied the literature of China. They lost, in consequence, perhaps, their fighting spirit and virility. The Chinese culture has ever proved fatal to the northern nomads.

The Kitans therefore soon lost their prestige among the untamed tribes of the north. In A.D 1114, one of their vassal tribes, the Nüchên or Kin (*chin*, i.e. golden), who were of kindred stock, dwelling in the valley of the Sungari River, now Kirin province in Manchuria, repudiated the authority of the Liao sovereign, and started a war of extermination against their former overlords. The Liao Kitans were unable to resist the attacks of their hardier

opponents. In A.D. 1124 the Kin completed the conquest of the whole Liao Empire, and drove the remnant of the Kitan people to seek refuge in western Turkestan There the Kitans established themselves in the Ili Valley, where they became known to the peoples of Western Asia and Eastern Europe as the Keraites, Kara-kitan, Kitay, and lastly, Cathayans, from which name that of Cathay for China, is derived. The western Kitan were converted to Nestorian Christianity in their new country, and this change of religion is the origin of the picturesque legends of the "kingdom of Prester John" which were later current in Europe. Their kingdom endured until the Mongol conquest.

The Sung Emperor Hui Tsung did not realise the danger to his empire which the arrival of the warlike Kin portended He welcomed the change which rid the empire of the Liao, and terminated the subsidy which the Sung had paid to them. He also regarded events in the north as a good opportunity to recover those lost territories in north-eastern Hopei province, within the Wall, which gave the enemy a footing on the great plain. Had the Sung Empire possessed the military strength to sustain a campaign against the Kin, this policy might have been successful, but the empire had been at peace for more than a century, the army was untrained, had no experience of war, and lacked capable commanders. Under these circumstances the policy of expansion unwisely undertaken by Hui Tsung was necessarily disastrous.

When the Liao fell, the governor of P'ing Chou (the modern district of Yung P'ing, the territory bordering the Great Wall near Shan Hai Kuan) refused to submit to the Kin, and offered allegiance to the Sung Hui Tsung accepted this submission, and despatched an army to take possession of the territory. This intervention in what they regarded as a domestic rebellion infuriated the Kin. Turning their arms upon the empire, the nomad cavalry poured over the frontier, and swept down to K'ai Fêng itself. Hui Tsung abdicated in favour of his son, and a treaty was hastily concluded with the Kin, by which a huge ransom was paid to deliver the empire of the invaders. This peace was concluded by the Innovator minister Ts'ai Ching, who was forced to resign and go into exile immediately afterwards, as he was held responsible for the disaster. The Conservative ministers

who succeeded Ts'ai Ching, with wanton irresponsibility, persuaded the Emperor to break the pact and send an army in pursuit of the retiring Kin

This folly ruined the Sung Empire The Kin returned, defeated the Chinese army, besieged and captured K'ai Fêng with the two emperors and the entire Court (A D. 1126) carrying off more than 3,000 prisoners of rank. Pursuing their conquests in a country now open to invasion on all sides, the Kin cavalry crossed the Yangtze in 1129 and pushed south as far as Hang Chou and Ningpo, in the modern province of Chekiang, which cities were captured and sacked. It was not until 1131, that the Sung, who had now found in Yo Fei a general capable of defeating the Kin, began to recover the territory south of the Yangtze and Huai Rivers

The wet rice-growing valleys of southern and central China were unsuitable country for the nomad cavalry, moreover, dynastic troubles wasted the strength of the invaders in civil war. Had the Sung Emperor, Kao Tsu (A D. 1127-1162), who had set up his capital at Hang Chou, permitted Yo Fei to press the campaign it is possible that the Sung might have recovered North China The Court of Kao Tsu was pacifist, and the chief minister, Ch'in Kuei, was convinced that any attempt to continue the campaign in the north would end in disaster. In 1141 he had Yo Fei put to death in a secret and discreditable manner, and concluded a firm peace with the Kin, by which China was divided between the two empires.

The southern Sung, as the emperors who reigned at Hang Chou are called, had lost seven provinces, everything north of the Huai River, the mountains of southern Honan and the range which forms the watershed of the Han and Yellow River basins in southern Shensi They retained the Yangtze Valley and everything to the south of it The Kin, established in these lost provinces, also ruled over the Mongolian and Manchurian plains which had formerly been part of the Liao state. This second partition of China (see Map 12) between nomad conquerors and a native dynasty lasted for 153 years, until both Kin and Sung Empires were reunited by a common conqueror, the Mongols It is to this period, though the fact is not attested in historical records, that the southward migration of the people known as the Hakka of Canton is

generally attributed The Hakka (mandarin *K'o Chia*, guest families) are certainly the descendants of northern Chinese, for their dialect still retains many northern words almost unaltered. They settled in the provinces of Kuangtung and Kuangsi, and have never mingled with the natives of the soil, probably on account of the wide differences between the two dialects.

As soon as peace with the Kin had settled the frontiers of their diminished empire, the Sung devoted themselves to the arts of peace and the prosecution of the great philosophic controversies of the day with as much energy and enthusiasm as before The menace of nomad attacks was apparently speedily forgotten, and the evident fact that pacifism was no safeguard against the attacks of barbarians, was disregarded Although a new Kin invasion was successfully repulsed at the Yangtze in A D. 1161, the Sung made no attempt to regain the north They remained, as before, a peaceful and peace-loving state, untroubled by internal rebellions. In spite of the abuse which Confucian historians have showered upon the Southern Sung Emperors for abandoning the north and for failing to appreciate or patronise the philosopher Chu Hsi, the empire was prosperous and well contented under their rule The Sung Empire enjoyed a further seventy years of unbroken peace, until the unwise policy of the Emperor Li Tsung brought the calamity of the Mongol invasion upon his empire.

The Sung had at first ignored the appeals of the Kin, who were on the point of succumbing to the Mongol invaders. On the contrary Li Tsung assisted the Mongols by sending infantry which the invaders lacked, to help in the siege of the last Kin stronghold, Ts'ai Chou in Honan. When, after the fall of Ts'ai Chou, the Mongol army retired northward to remount its cavalry, the Sung Emperor committed the extreme folly of endeavouring to seize the northern part of China for the profit of his own empire The Mongols, hearing of the Sung advance, immediately returned and invaded the Sung Empire, which was incapable of resisting them Although the war lasted many years, the end was certain, and the delay was only due to the pre-occupation of the Mongols with other campaigns. In 1276 Hang Chou surrendered and the

Emperor was carried off captive to the north. In 1279 the last Sung pretender, a young boy, was trapped with his fleet in a bay on the coast of Kuangtung, and threw himself into the sea, together with his ministers and family, in order to escape capture. The Sung dynasty perished with him.

Chapter XIX

THE ECONOMIC EXPERIMENTS OF WANG AN-SHIH

The reign of Shên Tsung (A.D 1068-1085), sixth Emperor of the Sung dynasty, is chiefly memorable for the ministry of Wang An-shih, and the revolutionary economic policy which he initiated. The same period was also that in which the famous historian, Ssŭ-ma Kuang, lived and worked, and as he was the lifelong opponent of Wang An-shih and his policy, Shên Tsung and Wang An-shih have been covered with obloquy by the orthodox historians of China, followers of Ssŭ-ma Kuang and his equally famous continuer, the philosopher Chu Hsi More recently it has become the fashion to describe Wang An-shih as a "socialist" and the alleged failure of his policy has been held to provide a useful illustration of the fallacies of socialist economic theory. So long does the dust of an 11th century dispute continue to obscure the historical scene.

No true appreciation of Wang An-shih's aim, or of the results of his policy, can be obtained by blindly accepting the hostile judgments of his opponents and interpreting the problems and policies of 11th century China in terms of modern movements with which they had little in common Wang An-shih was an "Innovator,' the leader of a political party which continued to dispute power with its Conservative opponents throughout the Sung dynasty Ultimately the Conservative elements triumphed, their enemies were branded as trouble-makers and unorthodox Confucians—for politics and philosophy went hand in hand—and their memory has been reviled by the historians of the victorious side Although the historians have recorded every fact or opinion which can discredit the policy of Wang An-shih, they have not been able to conceal certain evidence which is in its favour.*

The "New Laws" as they were called, were in force for nearly twenty years, throughout the reign of Shên Tsung, while some of them were revived for shorter periods by his successors when the Innovators were once more in power. During this time the empire

*The reforms of Wang An-shih are described in the *Sung Shih Chi*, Ch'uan. 37

remained internally tranquil, in spite of dire prophecies by the Conservatives, who repeatedly declared that the new policy would produce a great popular upheaval similar to the rebellions of An Lu-shan or Huang Tsao in the T'ang period Nothing of the kind occurred, nor is positive evidence lacking that the reforms were at least partly successful. The census of A D. 1083 was taken after the reforms had been in force for several years, and showed a considerable increase in the population That of A.D 1124, thirty-nine years later, shows a still more striking advance

A.D. 1083. 17,211,713. Families = 90,000,000 persons.
A.D. 1124. 20,882,258. Families = 100,000,000 persons

If the peasantry, who formed nine-tenths of the population, had really suffered the miseries and oppression which the critics of Wang An-shih delighted in describing, it seems strange that their numbers should have increased so greatly, and that there were no revolts. The Chinese masses have never been slow to rebel against misgovernment. It is very probable that some of the new laws failed to produce all the good effects which their author expected of them, for the official class as a whole was not in sympathy with the new policy and did not willingly co-operate in administering it When the criticisms of the Conservatives are analysed they are in the main not directed to the results of the new laws, but to the spirit in which they were conceived.

The Conservatives criticised the new laws not because they were bad, but because they were new. The methods of the past, the way of the ancestors, were right simply because they were traditional New policies must be wrong because they did not conform to these ancient patterns. That is the burden of Ssŭ-ma Kuang's frequent memorials of complaint. When he was asked whether, in fact, one of the New Laws was not operating well in Shensi province, he replied that although he was himself a native of that province he did not know how the laws worked, but that as the old laws had meant much hardship for the people, it was evident that the new ones must be still more oppressive. This was the mentality with which Wang An-shih had to contend.

Wang An-shih's new policy was intended to raise the condition of the farmer, benefit agriculture, and curb usury These are the reasons why he is often described as a Socialist. Such a description

is misleading. Wang An-shih, though an original mind, was a man of his time and country He never questioned the accepted form of government, autocratic monarchy. He did not entertain such ideas as class equality, and the source of his reforms was not a belief in the rights of man, but a return to authoritarian concepts held by the Chinese in the Ch'in and Han dynasties. Agriculture, he regarded as the fundamental occupation, the peasantry as the foundation of the state The Ch'in Legists and Mencius held the same views. Wang An-shih differed from his opponents on the question of administration. He believed that the existing system was inefficient, wasteful and unnecessarily oppressive. The Conservatives, true to Confucian doctrine, taught that if the Emperor were truly virtuous and the officials loyal and sincere the state organisation could be left to take care of itself. Wang An-shih, also a Confucian, did not deny the principle of moral authority, but he thought that better organisation was also desirable, and he held that natural catastrophes such as floods and famines, were produced by natural causes, not as divine punishment for the misdeeds of the Emperor. He also believed that Confucian virtues in the ruler and officials were not in themselves sufficient to ward off foreign invasion.

The Conservatives were never tired of warning the Emperor that Wang An-shih's new policy would lead to a great popular rebellion such as those that had devastated the empire in the T'ang dynasty. They ignored the fact that these rebellions had been largely due to the oppressive tribute system, by which the whole empire forwarded vast quantities of grain and produce to the capital. This system Wang An-shih changed, and was attacked for endangering the peace of the state. Although the capital was now at K'ai Fêng Fu, in the central plain, not far from the Yellow River, the transport of grain and tribute produce was still most burdensome to the provinces The western provinces might find the transport down stream more convenient than when the capital was at Ch'ang An, but the cost of forwarding produce from the southern provinces was almost as great as before It was inevitable that when the power of the throne diminished, or a weak ruler relaxed the efficiency of the administration, the distant provinces would attempt to shake off the incubus of Court rule

and the tribute system. Wang An-shih attempted to prevent this danger by reforming the tribute system and making it less burdensome to the remoter provinces.

The first of the new laws, called the "Equalisation of Loss," was directed to this end It was indeed not so much a new plan as a return to the system which Sang Hung-yang had invented under the Emperor Wu of the Han dynasty. This in itself was offensive to the Conservatives, for Sang Hung-yang had been one of the Emperor Wu's "new men," not a scholar, but a merchant. Under Wang An-shih's law tribute grain was no longer forwarded to the capital, there to be stored in state granaries, and sold at a low price, for under the old system there was always a glut at the capital and often a scarcity in the provinces, the cause of provincial discontent and rebellion

Wang An-shih arranged that the produce of one province should be exchanged against the tribute of some distant region. Tribute grain and silk could now be sold locally for the profit of the treasury rather than transported to the capital where it would fetch only a very low price Prices were kept even, gluts and famines avoided, and the peasantry assured of a steady and equal demand for their crops Such at least was the ideal which Wang believed his law would bring about, nor is it possible to discover how far short of it the practice fell, for his critics are so occupied with denouncing the novelty of his methods that they have little time to describe its working

One of the criticisms urged against the new laws was that their working involved the creation of a large number of new officials, or else threw upon the existing officers duties which they were not trained to perform It was said that when the officials took charge of matters of commerce of which they had no experience, prices were raised above those the merchants had been accustomed to charge, even though the object of the new laws was to make things easier for the poor. It is indeed quite clear that Wang An-shih had no consideration for commercial or financial interests, for some of the new laws were expressly directed against the merchants and moneylenders.

The Emperor and his minister soon found that a more even and scientific system of tribute gathering was not sufficient to

raise the condition of the peasantry Then as now the chief obstacle to improved agriculture and a raised standard of living was the utter penury of the farming population, who had no capital resources at all, and were year by year driven to the moneylenders to raise cash for seed grain and necessary implements Very often land was left uncultivated because there were no farmers able to buy the seed to sow it The boldest and most original of the new laws was designed to bring a remedy to this state of affairs This was the law called "Young Shoots," a system of state loans to the farmers on the security of growing crops.

Under the new plan, the state made a loan to the farmer in the spring, in proportion to the amount of land sown, and the loan was to be repaid with a light interest at the harvest Wang An-shih hoped that this system would lead to largely increased cultivation, and at the same time free the peasant from his dependence on the village moneylender and his extortionate rate of interest. The state, meanwhile, would have a safe yield on the money both from the interest on the spring loans, and also in taxation on the increased cultivated area The "Young Shoots" law was thus an early forerunner of the land and credit banks which at the present time are being started in China as the only way to help the peasantry to better their conditions.

It was, of course, bitterly denounced by Wang An-shih's enemies, who alleged that it failed in its purpose. Ssŭ-ma Kuang declared that while the peasants were willing enough to borrow government money in the spring, they could only be induced to repay the loans at harvest by the use of stern police measures, and, in consequence, the working of the new system was more oppressive than the old one had been This criticism, whether founded or not—and Ssŭ-ma Kuang's admitted ignorance of how the law worked in his native Shensi weakens his case—ignored the fact that before the reform the peasant equally borrowed money, but from a local moneylender at a high rate of interest, and that when he failed to repay the loan, the usurer, usually a local magnate of influence, ruthlessly invoked the assistance of the officials to recover his money.

Wang An-shih's interest rates were lighter, and the state,

having at heart the promotion of agriculture rather than a profit on the money, was a better creditor. Although the conservatives denounced the new law as an unmitigated evil, nothing is heard from the peasants' point of view, except the negative proof afforded by the fact that there was no revolt or popular uprising, the only and traditional peasant protest against injustice. If the "Young Shoots" law was as unpopular as Wang An-shih's enemies make out, it is curious that the peasants put up with it for twenty years without an insurrection

The law called "Remission of Services" was designed to place the forced labour system on a more efficient basis, and as such it marked a great advance in Chinese administrative practice, for it was intended to substitute taxation for forced labour on state works. Wang An-shih considered that the old methods by which the people were liable for periods of state forced labour was uneconomic and inefficient It was an inflexible plan under which it sometimes happened that the call would be made at a time when every man was needed for the harvest or the sowing season. At other times there would be no reason for forced labour at one place, but an urgent need for many workers elsewhere to repair a dyke or the defences of a city He therefore substituted a graded tax for the obligation to serve

Under his system five grades of wealth were distinguished, and taxed proportionately. With the proceeds of this tax labourers were hired as required for public works This plan was obviously more flexible The surplus of the new tax from one district could if necessary be applied in another where works of urgency required a large enrolment of coolies. If no public works of great importance were needed, the treasury collected a surplus which could be used for other purposes, or in relief works during years of famine and flood. Nevertheless, it did not escape the opposition which all the new laws aroused in the ranks of the conservative Confucians. It was alleged that the tax was at once oppressive to the poor, who could spare their labour more easily than their money, and insufficient for the purpose it was designed to serve

The difficulty would seem to have been, with this as with the other new laws, that Wang An-shih had no civil service trained

to carry out his advanced ideas The existing officials were accustomed to the minimum activities of the traditional system, tax collecting and maintenance of the peace They were neither able nor willing to supervise the detailed and elaborate plans which Wang An-shih thrust upon them When he enlisted large numbers of new officials more suited to this kind of work, their presence was resented by the old hierarchy, and too often they made a corrupt use of their opportunities

Wang An-shih, however, enjoyed the confidence of the Emperor, in spite of unceasing attempts to undermine his position. Shên Tsung deserves credit for his impartiality He listened, almost daily, it would seem, to bitter denunciations and diatribes against his minister and the policy which he himself had authorised. He sometimes had his doubts, where Wang An-shih, a most self-opiniated man, had none, but the Emperor was sincerely interested in the questions involved He was not an idler who left the government to his forceful minister Shên Tsung was himself a very frugal liver, he banished luxury from his Court, paid close attention to business, and seems to have indulged in few of the pleasures traditional to one of his station. Even the critics, who can never forgive him for preferring the counsels of Wang An-shih to those of Ssŭ-ma Kuang, can find no other fault to record against him.

One of the most ambitious of the new laws was a system of official price fixing and limitation of profits The officers of every sub-prefecture (*hsien*) were charged with the duty of determining the value of all property in their district, and the price at which it might be sold. No profit was allowed in excess of one-fifth of the total value of the property sold Household implements, food, and grain were not included in this scheme. Every owner was ordered to make a true return of his property not concealing or diminishing the value of anything A register was compiled from these returns, and property divided into five categories of wealth, probably on the same scale as that adopted in assessing the Remission of Services Tax If any sub-prefecture was found to be far more wealthy than the average, its taxes were assessed in common with a poor neighbour so that wealthy districts should assist the needy areas

This law, and that known as "Plane Mensuration" (Fang T'ien) was designed to equalise the land tax The second law was concerned with a remeasurement of land and a new scale of taxation upon it Although the reason for this reform is not very plain, it was probably due to the fact that land tenures had not been revised for many years, perhaps since the T'ang dynasty. Under the new plan land was divided into squares of 1,000 paces in length and breadth, or where the nature of the country made this impossible, into blocks of other shapes equal in area to the standard "*fang*" or square. The land was graded for taxation purposes into five classes, according to its fertility and the nature of the crops raised Barren, salt, and desert lands, mountains, forests, dykes, ditches, roads and cemeteries were not included in this scheme and were untaxed Timber growing on waste and mountain land was inspected and taxed in accordance with its value. Every farm, village or hamlet was registered, and the gross assessment of taxes for each sub-prefecture compiled and fixed as a limit not to be exceeded

It was hoped that in this way the old methods by which false returns and short measures were accepted by corrupt officials would be prevented In practice it seems very probable that all this close inspection and meticulous administration gave very many opportunities of oppression and corruption to the hordes of minor officials who were employed as surveyors and assessors, while the old scholar officials, mostly out of sympathy with the new policy, made little attempt to work it in a willing spirit Their criticisms were reinforced by those of the moneylenders and richer landowners, who found their traditional sources of wealth invaded by the state. It was no doubt in these classes that the keenest opposition was felt to another of the new laws which would otherwise seem to have been a wise reform, the establishment of government pawnshops, and markets for bartering

The pawnshop is in China the poor man's bank, where in spring the peasant pawns his thick winter clothes until he can redeem them at harvest time. The pawnshop is the only alternative to the moneylender, and often the proprietor of the former is none other than the latter Pawnshops were a favourite investment for wealthy men until the rise of modern banking and

commercial enterprises Wang An-shih, by establishing state pawnshops, giving easier terms than the private concerns, was striking a blow at a most powerful vested interest, and one which was closely bound up with the richer landowning class, from which his conservative scholar opponents came His object was, however, not any animus against the wealthy classes, but an endeavour to ease the lot of the peasants. This, it must be emphasised, was a policy inspired more by the desire to raise the revenue of the treasury than by humanitarian ideas

The source of almost all Wang An-shih's economic policy is not in modern ideas of class equality, of which he naturally knew nothing, but in the ancient Chinese economic theories first propounded in the kingdom of Ch'in, and later developed under the Emperor Wu of the Han dynasty. This, indeed, was clearly recognised by his enemies, who used the argument against him, urging that the policies of Ch'in, which had culminated in the burning of the books and the persecution of the scholars, were necessarily bad, and contrary to the Confucian principles of government Both Wang An-shih and his opponents, typical of their age, the archaistic Sung, turned back to the remote past of their country for inspiration and justification.

The second part of Wang An-shih's new policy was intended to guard against internal revolts and banditry, and also to provide against invasion by foreign enemies Almost alone of the prominent statesmen of the early or northern Sung, Wang seems to have realised the serious danger to which the empire was exposed by the development of powerful enemy states on the northern frontier, and their possession of the passes leading down into the north China plain. Unlike his opponent Ssŭ-ma Kuang, he did not believe that Confucian virtues would in themselves suffice to keep the nomads out of China

The Tithing System (*pao chia*) was designed to cope with banditry and crime, and also to provide a regular trained army for the defence of the state For this purpose every ten families were combined to form a tithing (*chia*) with a headman, every fifty families formed a "great tithing" and ten of the latter made a "head tithing," each division having its responsible head. Every member of these groups was responsible for the crimes and

misdemeanours of every other member, and if a crime was concealed, or abetted, the whole tithing was held responsible equally with the criminal himself. The headman had to keep a register of every member of his tithing, and he was also charged with the duty of investigating and reporting crimes. The tithing was furthermore responsible for the behaviour of strangers and guests who came amongst them

The tithing system was also used for military purposes Every family having more than two adult males had to provide one soldier, armed with bow and spear, and trained in the use of these weapons The tithing was responsible for the training of these levies. By this double function of the tithing Wang An-shih hoped to check and reduce crime, eliminate brigandage and provide the state with a steady supply of trained men ready to be called up for service in time of war. The general tranquillity of the Sung dynasty in respect of internal disorders suggests that the system certainly did work well as a cure for banditry and local revolts. It is noteworthy that this reform, almost alone of the new laws, has been revived by later rulers of China. The tithing system was re-established by the Manchu dynasty, and in very modern times Chiang Kai-shek has instituted it in districts adjoining the Communist areas, as the best method of checking subversive influences

The military provisions of the system seem to have been less successful The critics of Wang An-shih declared that the greater part of the peasantry were too poor to buy the weapons and equipment needed for the tithing levies, and that this expense was an unjustifiable burden upon them Nevertheless the Sung dynasty might have been better able to withstand the Kin invasions if Ssŭ-ma Kuang and his colleagues had not abolished the system when Wang An-shih's reforms were repealed

The chief arm of the nomad invaders was cavalry, and, as the experience of the Han and T'ang empires proved, Chinese armies could not hope to oppose these enemies successfully unless they too were well provided with mounted troops Horses, however, are not widely bred in China, being mainly imported from the Mongolian plateau Wang An-shih saw that this dependence on enemy controlled areas for the supply of cavalry remounts would

be a fatal handicap in war. The empire did not now possess any tributary horse-breeding area, such as the Han and T'ang Emperors had at their disposal. He therefore decided to institute a national horse-breeding scheme, which would render the Chinese army independent of Mongolian bred horses.

The Horse-breeding Law (*pao chia yang ma*) made it obligatory upon every family in the northern and north-western provinces (where there is suitable pasture) to keep one horse, which was supplied by the government, together with fodder for its keep in the winter months Families of greater means were obliged to keep two horses, and inspectors were appointed to see that the law was carried out, and that the animals were properly cared for. The plan seems to have been successful, for the province of the Court, Honan, raised 3,000 horses, and each of the five provinces of the north-west raised 5,000, so that the government could rely upon nearly 30,000 remounts for the cavalry. Had this law remained in force for a few years more the Chinese armies would have been well mounted when the Kin hordes broke into the empire, and might have succeeded in stemming the invasion.

The New Laws, the reform policy of the Emperor Shên Tsung and Wang An-shih, remained in force for nearly twenty years, from the appointment of the minister in 1068, until they were repealed in A.D. 1086, under the regency governing in the name of Shên Tsung's young son, Chê Tsung. Wang An-shih himself, however, had resigned in A.D. 1076, having lost the Emperor's favour, although Shên Tsung did not change the policy which Wang had initiated The minister retired to Nanking, where he died in 1086, the year in which his chief opponent, Ssŭ-ma Kuang, recalled to power by the Empress regent, swept away the whole system of the New Laws, and returned to the traditional forms of government.

It is difficult to discover the real effects of the New Laws. The Conservatives condemn them root and branch, using criticisms of unequal value, ranging from mere praise of traditional ways as in themselves better than any possible alteration, to allegations that the New Laws failed of their purpose and actually inflicted greater hardship on the class they were intended to relieve It is difficult to believe that the peasants would have peacefully accepted such revolutionary changes if they did not find them to

their advantage. The negative evidence of continuing peace and absence of disorder argues in favour of the New Laws and carries more weight than the diatribes of political opponents

It would seem indeed that much of the resentment which the new policy called forth was directed against Wang An-shih himself rather than against his measures. There can be no doubt that the great Innovator had a repellent personality. All writers insist on his obstinacy and self-conceit, while the poet Su Tung-p'o declares that he was uncleanly in his personal habits. The scholars, moreover, resented his heterodox views on points of Confucian scholarship and interpretation, and since in Sung China politics and philosophy could not be separated, the heretic in Confucian doctrine was inevitably regarded as a dangerous man to govern the empire, a trouble maker who should be kept out of the administration. Detesting the man, the Conservatives therefore condemned his work, but history in passing judgment on the New Laws, cannot pay attention to these personal considerations.

The death of Shên Tsung and Wang An-shih did not put an end to the reform policy of the New Laws For the moment, indeed, the triumph of the Conservatives was complete Under the regency of the Dowager Empress Kao, who had always been an opponent of Wang An-shih, Ssŭ-ma Kuang was recalled and immediately annihilated the work of his opponent After his death, however, in 1086, and that of the Empress Dowager herself in A D 1093, the young Emperor Chê Tsung took charge of the government himself and recalled the Innovators The change was partly due to the quarrels which had broken out among the Conservatives themselves, who were divided on matters of Confucian doctrine, and partly occasioned by the Emperor's dislike for his consort, a lady chosen for him by the late Empress Dowager (who was not Chê Tsung's own mother), as a political support in the palace for the Conservative party.

In A D 1094 the Emperor conferred the ministry upon Ts'ai Ching, an ardent disciple of Wang An-shih Immediately the New Laws were put into force once more, the Conservative ministers and officials degraded and exiled, and the memory of Ssŭ-ma Kuang and his associates publicly scorned by a decree

of posthumous degradation. In spite of the death of Chê Tsung in A.D. 1100, the Innovators continued to dominate the Court under his successor, Hui Tsung, the artistic last Emperor of the northern Sung The struggle centred about the personality of Ts'ai Ching, who, though several times dismissed, always obtained his reinstatement after a brief disgrace, and was still in power when the Kin invasions overwhelmed the empire and the two political factions in a common ruin

Under Ts'ai Ching and Hui Tsung the Innovators became more and more identified with the Taoists, upon whom they relied for support, for, although the educated classes were predominantly Confucian, the Taoists and Buddhists were numerous and influential among the mass of the people. Hui Tsung, who favoured Taoism, was responsible for this new departure, for since the position of the minister depended on the continued favour of the Emperor, Ts'ai Ching found it necessary to conform to his predilections The changed attitude of the Innovators tended to embitter the conflict even more, for Wang An-shih was a Confucian, even though he did not see eye to eye with other scholars on points of doctrine.

Whatever value the New Laws may have had it is certain that this political struggle, marked by sudden reversals of policy and violent changes in the economic system, as Innovators or Conservatives obtained power, was an evil which weakened the empire. The administration was rent by hatreds and political feuds, and disorganised by wholesale changes of personnel and lack of continuity in policy. Moreover, the quarrel in which the governing class was absorbed blinded them to urgent dangers arising beyond the frontiers While Ts'ai Ching and his enemies contended for power, the Kin Tartars were rapidly conquering the Kitan kingdom of Liao, the northern neighbour of the Sung Empire; but the Sung statesmen engrossed in their own affairs, paid no attention to this momentous development and made no preparations against the new enemy from the steppes.

Chapter XX

CHU HSI AND THE NEW CONFUCIANISM

THE Sung dynasty was an age of many-sided intellectual activity, in which the T'ang poetic tradition was carried on by men such as Ou-yang Hsiu and Su Tung-p'o, worthy to rank with the best of the T'ang poets, while history was enriched by the great works of Ssŭ-ma Kuang and other writers. It is, however, for its contribution to philosophy that the Sung period is most famous; the writers of the Sung school being second in importance only to the classical authors of the Feudal Age As it is the philosophy of the Sung writers which has been accepted as the orthodox Confucianism of all subsequent ages, its importance as a cultural influence in the later centuries of Chinese civilisation cannot be over-estimated. Confucianism, as taught in the seven centuries following the Sung period, is the doctrine of the Sage as interpreted by Chu Hsi and his predecessors in the Sung school in fact, this philosophy has often been called "Chu-Hsi-ism" by western writers, to emphasise the extent of the modifications introduced by the Sung philosopher

The word is too clumsy to be accepted, and it is, moreover, important to realise that neither Chu Hsi himself, nor any orthodox Confucian would admit that the doctrines of the Sung school were innovations on the contrary, they would argue vehemently that Chu Hsi had grasped the true meaning of the ancient texts, and that all other interpretations were erroneous Chu Hsi himself made this claim, and his followers held that in so far as the traditional interpretation differed from the work of their master, it was incorrect, and that for fifteen centuries the world of Chinese scholarship had mistaken the meaning of the classical texts It need not be doubted that Chu Hsi and all the Sung school really believed this astonishing proposition, but in the Sung period it would have been quite impossible to preach a new philosophy that did not claim to be founded on the classics The disputes of the Sung philosophers were not between Confucians and the followers of other teachers, but between rival schools of Confucians, differing on the meaning and interpretation of the

Confucian books The works of other classical schools did not enter into the discussion

The characteristics of Sung thought were a retrospective return to purely Chinese sources, a conscious archaism and a kind of cultural introspection. The T'ang had paid little attention to classical studies. They accepted the traditional Confucianism, but the mind of that age was set on other things The new Indian and western religions, things foreign and strange, were more attractive to the most cosmopolitan of all the Chinese dynasties. Under the Sung an intellectual reaction led to a real renaissance of classical literature, and branched off into the formulation of a new native system of philosophy, although it was never admitted to be an innovation This concentration on purely national thought was the intellectual aspect of the Sung outlook, which was national, conservative, and pacifist. Just as the empire had accepted a restricted territory which cut off China from the old land route to the west, so, in thought the Sung confined themselves to the national literature, and ignored the alien systems which had intrigued the T'ang.

The conscious archaism of the Sung can scarcely be better illustrated than in the jade *p'i* shown in Fig 55 On it are graved the animals of the four quarters, with just such slightly exaggerated energy as archaism is apt to produce.

Although it is impossible to assign to any one cause the sudden revival of classical learning under the Sung, the invention of printing, and the publication of cheaper printed editions of the classics, which made the ancient literature accessible to a larger public, was an important contributory factor; similar in its effects to the influence of the printed Bible among the Protestant nations at the Reformation. The progress of foreign religions under the T'ang also roused the Confucian scholars, who had always opposed these alien systems, to make a new study of their own philosophy, and endeavour to present it in a more systematised form. The influence of Buddhist theology and perhaps of theories from even further west is evident in the system of Chu Hsi

Although the new Confucianism is attributed to Chu Hsi, and was, in fact, perfected and systematised by him, he was not the originator of its leading ideas, for he was the last of the six

FIG. 55 *Sung Jade pi with archaistic animal motifs.*

celebrated philosophers of the Sung dynasty He is none the less the most famous, for he gathered up the work of his masters, and formulated the system which was to become, after his death, the orthodox school of Confucian doctrine. The distinctive feature of Chu Hsi's teaching, in common with that of all the Sung school, is its ethical character. The Confucian texts were interpreted from an ethical standpoint, the crudities of primitive rites explained, or, if this was inconvenient, explained away, and the ancient aristocratic code of the Feudal Age presented as a universal moral law equally applicable to all men. Confucianism, in a word, was modernised, stripped of its religious character, and left as an ethical system divorced from supernatural sanctions.

Any attempt to present a survey of the Sung philosophy and indicate the character and scope of the changes made in the traditional doctrine, is hindered by the fact that in the first place the Sung writers and their followers have never admitted that they made any changes at all, and also because they are themselves the accepted commentators and interpreters of the classical texts. It is first necessary to find out what Confucianism was before the Sung school re-shaped it. It is only in recent years that Chinese and foreign scholars have freed themselves from the Sung interpretations and to a considerable extent penetrated the original character of the classical texts In Chapter IV the Confucian texts have been discussed in the light of this modern view. It has been shown that while on the one hand many of the texts upon which the Sung relied were certainly not written by Confucius or any member of his school, others, particularly the Odes and the *I Ching* or Book of Changes, had a character entirely different to that attributed to them by the Sung writers

The Sung scholars ignored the historical development of the Confucian doctrine, and disregarded the varying social background which had moulded the original teaching and modified it in the Han period In their own day both the feudal aristocratic society of Confucius and the post-revolutionary age of the Han were equally remote. The centralised empire was the accepted, the only legitimate form of government Society was controlled by the large class of scholars who owed their position to education and not to birth No caste barriers prevented the clever son of a peasant from rising to the highest rank. Consequently they were not concerned, as in different ways, both Confucius and the Han scholars had been concerned, to find a principle of moral authority for the government and for society. The Sung, realising the cosmic limitations of this traditional political Confucianism, endeavoured to find a moral authority for the whole universe, and gave an ethical interpretation to what had been originally a social doctrine Since they could not discover any clear teaching on the Absolute in the better known Confucian texts such as the Analects, they turned to the *I Ching*—which had hardly been regarded as a philosophic book in the classical age—

and in the obscurities of this ancient text they found phrases to justify their own advanced thought

Having formulated a new system on this slender authority, they interpreted all Confucian and classical literature in accordance with it, and forced them into its framework The Chinese people have always demanded that all innovations should be founded upon some ancient authority, and as philosophers anxious to spread a new ethical system the Sung were quite justified in modernising and adapting Confucianism to suit their purpose, but a distinction must be made between Sung philosophy as an original doctrine based upon a forced interpretation of ancient texts, and Sung doctrine as historical criticism. The former is an important contribution to ethics and philosophy, the latter is a hindrance to a true conception of the ancient Chinese culture. It must be once more repeated that the Sung themselves were unaware of this distinction. They believed that they had grasped the true and original meaning of the ancient obscure texts, which had been lost for centuries.

The most important Sung innovation in Confucian doctrine was the work of Chou Tun-i (1017-1073) who was also the earliest of the Sung philosophers. Chou Tun-i found in the *I Ching* (Book of Changes) an obscure reference to T'ai Chi, the Supreme Ultimate. The phrase occurs nowhere else in classical literature, and is certainly not the work of Confucius The passage in which it occurs deals with divination and the trigrams. Chou Tun-i, however, seized upon it and made T'ai Chi the central point of his doctrine, and of the Sung system In this Supreme Ultimate he found the First Cause of the universe, the co-ordinating point from which the two principles *yin* and *yang* proceed The *yin* and *yang* are to the Sung the negative and positive expressions of the Supreme Ultimate. By their alternation they produce the Five Agents—or elements—Earth, Fire, Wood, Metal and Water. These, by their interaction, produce the world of phenomena.

To Chou Tun-i and his successors the Five Agents are cosmic forces, not to be strictly identified with the substances from which they take their names. As in the earlier system the Five Agents are related to the Virtues and the Seasons, but the Sung school insisted that the Supreme Ultimate is the final cause which

controls the alternating forces of *yin* and *yang*, and through them the operation of the Five Agents. The Supreme Ultimate "is all things and is in all things" Moreover, it is a moral force To the Sung school there is no distinction between the law of nature and the moral law. They are one and the same The world is controlled and inspired by the Supreme Ultimate which is Li (law), a moral law, identical with the ethical standard upon which human conduct should be modelled.

It is difficult to decide how far the Sung school considered the Supreme Ultimate, identified with law, as having personality—how far T'ai Chi, which Chu Hsi identified also with the ancient T'ien, Heaven, was God By some the Sung school have been regarded as materialists who set up abstract law as the First Cause; while others, arguing that this First Cause was moral, contend that Chu Hsi, at least, held that T'ai Chi had personality The difficulty arises from the fact that this aspect of the problem was the least stressed by the Sung themselves They were, like the earlier Confucians, at bottom more interested in conduct and ethics than in the theological side of their doctrine, a characteristically Chinese standpoint

Chu Hsi says indeed, that "there is not a man in Heaven judging sin," but when pressed by a questioner he also said: "It would be wrong to say that there is no ruler of the universe at all."

The Sung school combated the anthropomorphic ideas which were derived from Buddhist and Taoist sources, but stopped short of affirming that the T'ai Chi was pure law, like a law of nature such as gravity. The tendency of their teaching was certainly to whittle away the conception of a personal deity which underlay the ancient Shang Ti, a term which probably originally meant the Great Ancestor Shang Ti occurred in too many ancient texts, and was invested in them with attributes incompatible with the idea of a pure, impersonal law, to be ignored by a school which claimed to be interpreting the classics, not preaching a new doctrine. So in the Sung system Shang Ti T'ai Chi and Li, the Law, are treated as equivalent terms illustrating different aspects of the First Cause

They could not admit that the world had outgrown the primitive religious beliefs of which the texts showed such abundant

traces, for to do so would destroy the essential Confucian tenet which regarded the age of Yao and Shun as the type of perfection to which the world must return. They preferred to concentrate attention upon the ethical quality of T'ai Chi, the First Cause, in its aspect as Li, the law, leaving the question of personality in some obscurity. In the event the rather half-hearted admission of Divine Personality made by Chu Hsi as quoted above was ignored by later Confucians, to whom moral law, impersonal and abstract, became the First Cause of the universe

Li, or moral law, became for the Sung philosophers the supreme controlling force in the universe "Heaven is Law," wrote Chu Hsi This moral law which operating through the *yin* and *yang* and the Five Agents was the mainspring of the world of phenomena was also the ethical law by which man lived It was expressed as the four chief virtues, Benevolence*, Righteousness, Reverence and Wisdom, to which Sincerity was added. According to the Sung theory, which drew no distinction between the moral and material, both being equally the work of Law (Li), the virtues were the moral expression of the five cosmic forces called the Five Agents, which in the material world produced the seasons. A table of these equivalents was expressed thus

Benevolence (jên)	Wood	Spring
Righteousness (jên)	Metal	Summer
Reverence (chung)	Fire	Autumn
Wisdom (chih)	Water	Winter
Sincerity (hsin)	Earth	

The fifth virtue and its corresponding agent, having no season, were allotted eighteen days in each of the four seasons. Benevolence was the highest of the virtues, the supreme quality of Li (Law), and the other virtues were subordinate to it and in a sense regarded as aspects of Benevolence

The Sung, therefore, having added T'ai Chi, the Supreme Ultimate, to the Confucian theory, and equated it with the

*Jên This has sometimes been rendered as "Love," and is so translated by Prof J P Bruce in his translation of Chu Hsi *The Philosophy of Human Nature*. London 1922 "Love," however, as a philosophic or theological term is so intimately associated with the Christian doctrine that it seems liable to cause confusion if used for the Confucian *Jên*, which is more abstract

traditional Heaven, and Li, the moral law, held that it operated as Benevolence It was necessary, of course, to account for evil, which would appear to have no place in the system outlined by the Sung school except in the nature of man. Even here a careful distinction was drawn. Mencius had said that the Nature of Man (*hsing*) was good, and Hsun Tzŭ, who taught the opposite, was regarded by the Sung as a heretic. Moreover, as man obtained his nature from Heaven, that is from the moral law, it was of necessity good Chu Hsi was very severe on those who believed that the nature of man was neither good nor bad, but depended for its development wholly on its training This was called the "whirling water" heresy, because Kao Tzŭ, an opponent of Mencius, had declared that the nature of man was like water whirling in a rocky gorge, and would flow out along the line of least resistance, whether that was bad or good. This doctrine was still held by certain scholars in the Sung period

According to Chu Hsi the nature of man, the original nature which he obtained from Heaven, is both good and incorruptible. When exposed to the temptations of the world it may be obscured, and lost. Nevertheless, like a pearl in a bowl of dirty water, the original nature remains pure and unchanged, and can shine forth in all its brilliance if the impurity is removed This simile, and that of a mirror covered with dust which if cleaned will be as bright as ever, are favourite illustrations of Chu Hsi's doctrine of the nature of man Evil, therefore, was the result of neglect of this nature, by which it became obscured by the temptations of the world The duty of man was to cultivate his nature and keep its original purity unsullied Since man, alone of the animals and created beings, possessed the full and perfect nature, while all other creatures had only received a partial one, incapable of true perfection, he alone could attain the proper development, or the Mean (*Chung Yung*), a doctrine to which Chu Hsi attached great importance It was derived from an ancient book, entitled *Chung Yung*, attributed to the grandson of Confucius, and was regarded as an orthodox exposition of the teaching of the Sage himself. The Sung school conferred a new importance and authority upon this book, which does not seem to have been classed as a classic of the first importance in earlier times.

The Sung school's insistence on the Mean applied to both excesses, failure to cultivate the *hsing* (nature), and also to asceticism. While the profligate obscured his nature by exposing it to worldly temptations, the Buddhist monk, who renounced his family and cut himself off from human relationships, erred equally against the Mean He ignored those duties which bind parents and children, and living men with the ancestral spirits. These relationships, which form an essential part of the world order, must necessarily be good and right, for they proceed from the Law. Chu Hsi therefore roundly condemned the Buddhist doctrine which taught that the world of phenomena was an illusion, and the only reality the mind of Buddha.

In Chu Hsi's system man gets no assistance from supernatural agencies in his endeavour to keep the Mean. There is no redemption of sin through divine intervention, nor any judgment or future reward. The duty of man is his alone, and it is its own reward. Prayer, accordingly, plays no part in his system, for the moral law, to which Heaven is reduced, though benevolent, does not intervene in the individual problems of mankind. It is true that Chu Hsi retained the idea developed by Han scholars, that natural calamities were manifestations of Heaven's displeasure with the conduct of the rulers of mankind Sung doctrine, however, regards these phenomena less as the wrath of a divinity than as disturbances in the harmony of the universe due to wilful opposition to the Law.

This was the only explanation given by the Sung school for the most difficult of all problems, that of evil for which the individual cannot be held responsible Chu Hsi believed that man's material destiny (poverty or wealth, health or infirmity) was ordered by the Decree of Heaven, but that this Decree did not prevent the cultivation of the moral nature, which was the duty of man, however he might be circumstanced. He offered no answer to the problem why men were born with such varying fortunes, nor why some endured misery for which their conduct offered no justification, and others escaped the consequences of folly and sin. This omission left Buddhism with an unchallenged answer to the great problem Man, said the Buddhists, suffers in this incarnation for the sins he committed in the last, or is rewarded by happiness

now for his virtuous life in past ages. Perhaps for this reason Buddhism held its own against the New Confucianism, particularly among the mass of the people who suffered the inequalities of this world.

Although the teaching of Chu Hsi was finally accepted as orthodox, it was vigorously opposed during his own lifetime. The school of which he was the most famous teacher was not the only one to flourish in the Sung period, nor was Chu Hsi the first to preach its peculiar tenets. Chou Tun-i, as has been mentioned, originated the theory of T'ai Chi, and his teaching was transmitted by three of his pupils, counted among the six great philosophers of the Sung school. These were Ch'êng Hao (1032-1085) and his brother Ch'êng I (1033-1107), their uncle Chang Tsai (1020-1076), and Shao Yung (1011-1077), who first turned the attention of scholars to the *I Ching* and raised the question of the nature of man. Chu Hsi himself came after all these scholars, for he lived in the southern Sung period, after the Kin invasions (1130-1200). The Hu and Su schools, though Confucians, were the most important of the opponents of Chu Hsi. These schools were called after their respective founders, Hu An-kuo (1074), and the Su family, Su Hsin and his sons, one of whom was the famous poet, Su Tung-p'o. The points in which they differed from Chu Hsi were mainly matters of definition and the interpretation of terms. The Hu school, for instance, contended that it was not possible to describe the nature of man as "good" without implying that it must also be capable of evil, because "good" is a relative term which suggests the existence of evil as its contrary. Mencius therefore when he said. "The *hsing* (nature) is good," was merely making an exclamation of admiration. They also argued, rather in the Taoist manner, that the original *hsing* could not be described in such terms as good, for it was sublime and transcended all contraries. Finally, they argued that the nature of man as it exists in the living man (as opposed to the pure nature which he obtains at birth) can be defined as the faculty of liking and disliking. The enlightened man is guided in his likes and dislikes by the moral law, the base man merely by his selfish desires.

The Su school held that the nature of man (*hsing*) did not necessarily consist of the four virtues, but that before it assumed

this moral quality it was necessary for man to adopt them by an act of voluntary acceptance. The *hsing* existed eternally, before the birth of the individual, but until man cultivated it by implanting the four virtues, it could not be considered to be moral. They were thus opposed to Chu Hsi's doctrine that the nature of man is the sum of the four virtues, and not an entity separated from them.

The doctrines preached by the Sung school, perfected by Chu Hsi, were not accepted as orthodox until nearly the end of the Sung period. During the lifetime of the philosopher himself the great majority of scholars were strongly opposed to Chu Hsi and his teaching. The fact is important for it proves that the philosophy of the Sung school was regarded as heretical by contemporaries and not as a return to the real meaning of the Confucian classics. It would, indeed, have been remarkable if such striking innovations has been allowed to pass without arousing opposition among those who held to the traditional interpretation of the ancient literature.

Politics, however, were mixed up with philosophy in this opposition. Chu Hsi was born in 1129, a few years after the Kin conquest of the northern provinces of the Sung Empire. He died in 1200 at the age of 71, and his life thus covered the major part of the southern Sung period. After the fall of K'ai Fêng to the Kin the quarrel between the Innovators and Conservatives which had centred round the personalities and policies of Wang An-shih and Ssŭ-ma Kuang respectively, was extinguished with the disappearance of the former party. In the southern empire a new alignment of parties perpetuated the strife of the scholars. Their disputes arose from a split in the ranks of the triumphant Conservatives.

Chu Hsi, and those who shared his views, were in favour of a war of revenge, to chase the Kin out of China, and recover the lost provinces. They based this policy on the Confucian doctrine that a filial son must avenge the death of his father. The southern Sung Emperors were the sons and descendants of the unfortunate Hui Tsung, who had died in captivity after the surrender of K'ai Fêng to the Kin. Therefore, contended Chu Hsi, the first duty of the Sung Emperor was to avenge his death.

The party in power, headed by the minister, Ch'in Kuei, were on the contrary in favour of peace They doubted, probably rightly, whether the empire had the military strength to overthrow the Kin, and feared that if an aggressive policy was adopted the only result would be a fresh invasion which would finally destroy the Sung Empire They accepted the loss of the north as irretrievable, and strove to consolidate the remaining provinces into an empire bounded to the north by the watershed of the Yangtze and Yellow River basins

The opposition between these pacifists and the war party was aggravated by doctrinal differences The views of Chou Tun-i, the two Ch'êngs, and Chu Hsi were by no means generally approved. In 1178 both Ch'êng I and Wang An-shih, opponents in matters of philosophy, were excluded from the list of sages honoured in the Confucian temples, on the advice of a minister. It was urged that these vain discussions and involved interpretations only encouraged the formation of factions and acrimonious disputes These writings should be discouraged, and scholars adjured to abide by the plain text of the classics and the traditional interpretation. Chu Hsi replied by forming his followers into an association known as the "School of the Way," i e "the Truth," and stigmatising his opponents as "*hsiao jên*," the classical term which he interpreted not as "little men" in the sense of social inferiors, but as persons of mean moral stature

Although Chu Hsi was several times recommended for office by his friends, and was employed in different capacities for short periods, the hostility of the dominant party prevented him from exercising any real influence upon governmental affairs, and he spent the major part of his long life as a "sleeping dragon" an official in retirement in the provinces. In 1193, indeed, he obtained a brief promotion The ambassador at the Kin Court reported to the Emperor that the Kin ruler had enquired what post the "great Chu Hsi" occupied at Hang Chou, the Sung capital. The Emperor, perhaps fearing that if the School of the Way heard how much they were appreciated in the northern empire, they might become pro-Kin, hastily appointed Chu Hsi prefect of Ch'ang Sha in Hunan, an important post, but far removed from the Court

Two years later the minister Han T'ou-chou, a vehement opponent of the School of the Way, came to power, and at once initiated a proscription of his enemies. A register of members of the School of the Way was compiled and they were debarred from holding any official post. Candidates for office were required to abjure the doctrine of Chu Hsi before obtaining a position. The leading members of the school were put under police observation, and the name of the school prohibited In future the followers of Chu Hsi were officially described as "the School of Lies," and later "the Rebel Faction." Apart from opprobrious labels and exclusion from office, the government, true to the civilised practice of the Sung, did not proceed to acts of violence against the proscribed party

Chu Hsi himself did not long survive the reverse of his fortunes He died in 1200, surrounded by faithful disciples, but also by police observers Like Confucius himself, the Sung philosopher was rejected and persecuted during his lifetime, but honoured after his death. In 1227 the Emperor Li Tsung, who reigned over an empire fast dwindling before the Mongol invasions, rehabilitated Chu Hsi, and ardently espoused the teaching of the School of the Way. The offensive epithets were expunged, Chu Hsi was posthumously made a duke, and a few years later, in 1237, his commentaries and the historical works of Ssŭ-ma Kuang were officially recognised as texts for school instruction and the examinations for the civil service In 1241 the Emperor, more occupied with philosophy than the defence of the state, issued an edict commending Chu Hsi and the Sung school

The true doctrine of Confucius, it was declared, had been lost after the death of Mencius, some thirteen centuries previously. Chu Hsi and his masters had re-discovered the real interpretation, which henceforward should alone be admitted to be the orthodox doctrine While the Sung were thus tardily recognising Chu Hsi as the re-founder, or rather, in the official view, re-discoverer of Confucianism, the new doctrines were spread in the northern provinces subject to the Mongols. A Chinese scholar who had accompanied the Mongol army which invaded Szechuan province, returned to the north in 1238 with a library of the Sung

school's works, and after founding a college at Peking, made the new doctrines paramount in the north.

Thus the School of the Way triumphed in both north and south, just at the moment when the Chinese Empire was about to be extinguished by the Mongol conquerors. The Sung state succumbed to the nomad attacks, but the philosophic victory of the Sung School proved more lasting than the military successes of the Mongols

Chapter XXI

THE NOMAD INVADERS

INTERCOURSE between China and foreign nations in the Sung period was of two kinds; peaceful trading relations with the Arabs who came by sea to the ports along the south-east coast, and devastating invasions by nomadic raiders from the Mongolian steppes The contact with the Arabs not only brought great wealth to the southern Chinese provinces, but also increased geographical knowledge of the countries to the west of the Indian Ocean The nomadic invasions largely ruined the north-west of China, and led to the rapid decline of the ancient caravan route to Central Asia and the Chinese cities which formed its eastern termini.

The Mongol invasion, the last and most destructive of these incursions, destroyed for ever the ancient importance of the "land within the passes"—Shensi and Kansu—which in Han and T'ang times had been the centre of Chinese civilisation The diminished population was no longer able to keep the irrigation works in repair, and many of the cities on the northern frontier were in time overwhelmed by the drifting sands of the desert. The south, on the other hand, escaping the worst fury of the Mongols, became the real centre of Chinese culture, and it was from this region, a mere colonial territory in Han times, and still very little exploited in the T'ang dynasty, that the later Chinese dynasties took their origin and derived their support The invasions of the north, and its separation from the south for more than a century, had another consequence. It is after the Sung dynasty that the rivalry and distinction between north and south first becomes a factor of importance in Chinese history In earlier dynasties the south was not sufficiently important to claim equality with the older provinces north of the Yangtze, but after the Sung the pretensions of the southern provinces, and the hostility they aroused in the north, are a constant feature of Chinese politics, and even affected questions of literature and art.

Although the outlook of the Chinese in the Sung period was less cosmopolitan than it had been under the T'ang, geographical

knowledge was considerably extended. It is characteristic of the Sung that exploration and oversea trade was left in the hands of foreigners, the Arabs, so that Chinese knowledge of the west was largely vicarious. Sea-borne trade, checked by the sack of Canton during Huang Tsao's rebellion in the closing years of the T'ang dynasty, swiftly recovered under the Sung. While Chinese ships seem to have visited Japan, the Philippines, Cochin China and the Malay Archipelago, the traffic across the Indian Ocean was entirely in Arab hands. This monopoly was probably enforced by the Arabs themselves, to judge from the hostile reception they accorded to the Portuguese when they first entered there seas.

Canton, Ch'uan Chou in Fukien, and Kanpu, the port of Hang Chou, were the chief centres of Arab trade in China, and in these places Arabs were permitted to reside and follow their own religion and customs, as had been the case under the T'ang. The Chinese Government, however, carefully controlled the trade, collecting a customs duty which was very remunerative. Inspectors of Foreign Trade were appointed to the chief ports, and it is in a book written by one of these officials, Chao Ju-kua, a scion of the imperial family who held the post in Fukien province in the early 12th century, that most of the geographical information derived from the Arabs is contained.*

Chao learned from his Arab informants not only new details about countries such as Persia and Mesopotamia, which were already familiar to the Chinese, but also information about parts of Africa and the countries of the Mediterranean, which had hitherto been entirely unknown to China. He gives an account of Egypt, which includes a description of the rising of the Nile, "a river whose source is not known," and also a reference to the Pharos at Alexandria, where "on the seashore there is a great tower"—but this was probably a tradition, and not contemporary evidence.

Zanzibar, where Sung porcelain has been found, is mentioned as "as an island in the sea, to the west of which is a great mountain," which may possibly be a reference to Kilimanjaro. The

**Chu fan chih.* It has been translated into English, under the title, *Chau Ju-kua*, by Hirth & Rockhill St. Petersburg Academy of Sciences. 1911.

giraffe and zebra of the Berbera coast are described, the latter as "a kind of mule with brown, white and black stripes around its body." Madagascar is

> "An island in the sea on which there are many savages with bodies as black as lacquer and with frizzed hair. They are enticed by offers of food and then caught and carried off as slaves to the Ta Shih country (Arabia), where they fetch a high price They are employed as gatekeepers, and it is said that they do not pine for their home land."

Chao Ju-kua also heard of Morocco and Spain, but his informants, who had probably never been there, could tell him nothing but the names of these distant lands, and that to the north of Spain, "if one travels by land for two hundred days, the days are only six hours long." This is the first reference in Chinese literature to the north-west of Europe Other European countries were better known. Sicily (Ssŭ-chia-li-yeh) is fully described.

> "The country of Ssŭ-chia-li-yeh is near the frontier of Lu-mei [Rum, i.e the Byzantine Empire]. It is an island in the sea, a thousand *li* in breadth [300 miles] The clothing, customs and language of the people are the same as those of Lu-mei. This country has a mountain in which there is a cavern of great depth When seen from afar smoke issues from it in the morning, and fire at night When seen from a short distance it is a madly roaring fire. When the people of the country carry up a big stone weighing 500 or 1,000 catties and throw it down into the cavern, after a little while there is an explosion, and the stone comes out in little pieces like pumice stone Once in every five years fire and stones break out and flow down as far as the sea coast, and then go back again The trees in the woods through which the fire passes are not burned, but the stones in its path are turned to ashes."

It would seem that this account of Etna had been somewhat distorted, either by the Arab traveller, or because Chao himself did not quite understand what his informant wished to say. There

are no active volcanoes in any part of China, therefore the Chinese had no knowledge of eruptions.

The Sung History recounts further contacts with the Byzantine Empire, including a description of that Empire by the ambassador of a certain "King" Mieh Li I Ling Kai Sa, who has been identified as the Emperor Milissenus Nicephorus Caesar (A D. 1080). The ambassador is called Mi Ssu Tu Ling Ssu Meng Pan in the Chinese history and it has been suggested that this represents "Maitre Simon de Montfort"—a member of that famous family in the service of Byzantium * The object of this embassy and two others which followed in the decade between A D 1081 and 1091 was probably political. The Byzantine Empire had recently suffered the disaster of the battle of Manzikert, which cost the empire the loss of Anatolia The Greeks hoped to enlist Chinese aid in their struggle against the Turks, whose domains stretched eastward to Central Asia. Had the Sung been willing to resume in these regions the policy of expansion which the Han and T'ang had followed, their intervention would have diverted Turkish pressure from the hard pressed Byzantine Empire. The pacifist Sung, however, contented themselves with making some fine presents to the ambassador, but offered no armed assistance.

The extent of the new geographical knowledge obtained by the Chinese at this time is interesting, as showing that the Chinese were fairly well informed before the Mongol conquest of Asia first opened that continent to European travellers Marco Polo, and other Europeans in the service of the Great Khan, or on embassies to his Court, were the first to bring precise knowledge of China to the west China, on the other hand, acquired no new knowledge of the west through the Mongol conquests. This fact is important. For Europe the chief result of the Mongol conquest was the temporary elimination of the hostile Moslem states which had barred the way to Asia, and in consequence there was a great extension of geographical knowledge To the Chinese, however, the land routes to the west had been known for centuries before the Mongols, and the sea route was also already fully developed

*"Two Studies in the History of Foreign Relations of the Chinese Empire" Yang Hsien-Yi *Philobiblon* Vol II, No 1 The National Library, Nanking 1947

Thus China suffered the destruction and appalling wastage of Mongol savagery without any compensating gain in knowledge, while Europe, escaping the worst of the onslaught, learned of new lands of incredible wealth and far higher civilisation. It was in quest of this new world that her adventurous seamen soon set out, to find, by accident, another new world, the American continent. The devastation of Asia by the Mongol conquest and the increased knowledge of geography which Europe acquired by the same agency, was the origin of the ascendancy which the western continent later obtained.

The Sung Empire never extended over the whole of the Chinese lands, and from 1124 it was confined to the provinces south of the Yellow River basin. From the first Sung China was hemmed in to the north and north-west by hostile and powerful states, which had borrowed Chinese forms of government, and were not merely tribal confederacies such as those which the Han and T'ang dynasties had successfully repulsed. The border kingdoms in the Sung period, although ruled by the conquering nomad people, included many Chinese among their subjects, and established their capitals in purely Chinese cities. For this reason they rapidly assimilated Chinese culture and became semi-Chinese states. The Sung dynasty never had an opportunity to re-establish the ancient Chinese domination in Central Asia, from which it was cut off by these border kingdoms Having lost the defensive line of the Great Wall, it was always at a disadvantage and was forced to follow a policy of passive defence, and if possible, of peace.

In the later years of the T'ang dynasty a great change had occurred in the northern steppes The Turkish tribes, Uighurs, and others, who had for some centuries been the dominant race, were displaced by newcomers from two directions. In the west the Tanguts, a people of Tibetan stock, descended the upper valley of the Yellow River and established themselves on the north-western frontier of China, in the long "arm" of Kansu stretching out towards Turkestan, and in the Alashan region to-day called Ning Hsia province. Here they founded the kingdom of Hsia, which endured until the Mongol conquest, and effectively barred the Chinese from the land route to the west. The Kings of Hsia, however, were to some extent influenced by Chinese

culture. They bore a Chinese surname, Li, granted to their ancestor by the T'ang Emperor Hsi Tsung as a reward for their assistance against the rebel Huang Tsao*.

In 982 the ruler of the Tanguts, who had hitherto only used the title of Duke, granted him by Hsi Tsung of the T'ang, proclaimed himself King of Hsia, and refused to acknowledge the authority of the Sung Emperors. In 1028 the Hsia conquered the whole of the "arm" of Kansu province, and what is now Ning Hsia province Their capital was fixed at Ning Hsia, a Chinese city, and they also held the important cities of Liang Chou, Kan Chou and Su Chou, on the caravan route to Central Asia. In spite of this considerable Chinese population the Hsia did not accept Chinese culture as a whole. They used their own system of writing, a character which has not yet been deciphered.

Although small in area compared to its neighbours, the Sung Empire, and the Kitan kingdom of Liao, Hsia was a warlike and powerful state which successfully repulsed every attempt to reduce it, whether made by the Chinese or nomads, until it succumbed before the appalling onslaught of the Mongols, who exterminated the Hsia people and left the country a wilderness It is largely owing to this terrible end that so little is known of the Hsia state and its culture Everything, and almost everybody in the kingdom, perished at the hands of Genghiz Khan.

While the far north-west of China had fallen into the hands of the Tanguts of Hsia, the eastern portion of the steppe lands was occupied, at about the same time, by a Tungus people, the Kitans, who had originally inhabited the Amur and Sungari Valleys in what is now North Manchuria The Kitans are first mentioned by the Chinese history in 696 They were then divided into eight hordes, the khans of which elected a Great Khan, who held that office for three years, and then retired. This elective monarchy came to an end at the beginning of the 10th century when the Great Khan Apaoki refused to resign at the end of his three years, and, after overcoming the opposition which his

*Li was the surname of the T'ang imperial family It was frequently granted as an honour to deserving families, both Chinese and barbarian, who were thus affiliated to the imperial clan The custom, much practised by the T'ang Emperors, was maintained by the Sung, but more rarely used

pretensions aroused, made himself hereditary King of the united Kitan nation In 916, no doubt after learning of the deposition of the last T'ang Emperor, he himself took the title of Emperor, and started to raid the northern frontiers of China, which were left exposed in the chaos which followed the collapse of the T'ang.

Ten years later, in 926, in return for helping the founder of the Later Tsin "dynasty"—himself a Turkish adventurer—the Kitans obtained the cession of the north-east corner of Hopei province, the area, including the site of modern Peking, between the Great Wall and the sea as far south as a line drawn south of Tientsin tō the border of Shansi province, all purely Chinese territory Rather later the Kitans took possession of the territory between the Inner and Outer Great Wall, in the modern provinces of Chahar and Suiyuan, including the city of Ta T'ung Fu, which became one of their capitals They had already conquered South Manchuria, the Liao Tung peninsula, which had been a T'ang province, and which had been for many years a settled country with numerous cities and towns.

Thus, although the Kitans never conquered any large extent of China south of the Great Wall, they actually ruled over a wide extent of country inhabited by Chinese, and fixed their capital in a Chinese city. It is not possible to know the proportion which the Chinese bore to the Kitans themselves in the new Liao kingdom (Liao was the dynastic name chosen by the Kitans), but it seems very likely that the Chinese outnumbered their conquerors several times. When Apaoki swept down to the Great Wall, he was said to have had 300,000 fighting men, the whole strength of the Kitan nation. Accepting this figure as approximately accurate, the Kitan people, including women and non-combatant males would have hardly numbered more than two million souls. The Chinese of Liao Tung, Northern Hopei and the intra-mural territory must have been at least as numerous.

Established on the borders of the Sung Empire, and ruling over a large Chinese population, it was not long before the Kitans adopted Chinese civilisation and abandoned the customs of their nomadic ancestors The bulk of the tribe settled in the border land, the modern provinces of Jehol and Chahar, while the

original home of the Kitans became the cradle of another nomadic conquering race. After making peace with the Sung Empire in the year 1004—a peace by which they received a large annual subsidy, or tribute from China—the Kitans left the Sung Empire alone, and, except for some unsuccessful attempts to conquer the Hsia kingdom, remained at peace with all their neighbours. From this date until their destruction by the Nuchens, the Kitan Liao dynasty was to all intents a Chinese dynasty, and as such it certainly appeared to foreign peoples. The name Cathay, which the European peoples first applied to China, is derived from the word Kitan, and the Russians to this day use the variant Kitai as the name of the Chinese people Cathay, however, originally meant north China, the part of the country reached by the land caravan route across Asia To Marco Polo, south China was Manzi, a corruption of the Chinese word Man Tzŭ, which really means a non-Chinese aborigine of the southern provinces It is a singular fact that the Chinese were first known to Europe by two names, neither of which correctly belonged to the Chinese people at all, but on the contrary, to their traditional enemies

The Nuchen, like the Kitans, were a Tungus tribe who dwelt on both banks of the Amur River. During the heyday of the Kitan Liao dynasty the Nuchens were a tributary people, governed by their own chiefs. Early in the 12th century, under a leader of genius named Akuta, the Nuchens threw off the yoke of their Kitan rulers, and started a war which was not to end until the Liao dynasty and the Kitan nation had been utterly overthrown. In 1124, after conquering the whole Kitan kingbom, Akuta quarrelled with the Sung, and swiftly overran the whole of north China. Had his generals shown more persistence, and had he himself lived, the whole of China would have been conquered with as little resistance as was shown in the north. The Nuchens burned Hang Chou and captured Ningpo far down the south-east coast, but on account of the dissensions which broke out after Akuta's death, they relaxed their efforts to conquer the south and finally accepted the north watershed of the Yangtze Valley as their southern frontier

In 1147 they were compelled to abandon their original

territory to a new conquering nomad people, the Mongols, who defeated the Nuchen and expelled them from their old home in the Kerulen Valley. The Nuchens then moved south into China, and fixed their new capital at Peking, then called Yen, which now for the first time became the capital of a large empire. The Nuchens also adopted the Chinese name of Chin for their dynasty (more commonly spelt Kin when applied to them). Spread thinly over the populous provinces of north China, which, to judge by the census figures of the Sung Empire taken the year before the invasion, must have contained nearly 50 million people, the Nuchens speedily lost their identity, and rapidly became absorbed in the Chinese population. In 1187 the Kin Emperor,[1] alarmed by the extent to which this assimilation had already taken place, endeavoured to check it by forbidding his Nuchen subjects to take Chinese surnames or wear Chinese costume.

If these edicts enforced an outward distinction between the two peoples, in every other respect the Kin soon became a Chinese dynasty. Confucius was as much honoured in the Kin Empire as in the Sung. Chu Hsi, in fact, the great contemporary Sung philosopher, was better appreciated in the north than in his native state, during his own lifetime.

There is nothing surprising in this swift transformation of a race of nomad warriors. The Chinese Empire was then more populous and civilised than it had ever been before. K'ai Fêng Fu, which surrendered to the Kin, was the centre of this civilisation, a city inhabited by thousands of skilled artisans, and hundreds of refined scholars. The Kin had been an uncivilised tribe of nomads when they conquered the northern provinces. They had nothing to contribute to this civilisation, except their fighting spirit, which, on the contrary, they soon lost. Therefore, although the Sung political control of the north was lost in 1124, the cultural unity of the empire continued, unchanged by the nomadic conquest.

If the Liao and Kin conquests had been the last of the nomad invasions suffered by China, the empire and its civilisation would not have sustained much lasting damage, but the Kin were to be followed by the Mongols, the most savage and pitiless race known to history. In 1206, little more than eighty years after the Kin conquest of north China, Temujin became Great Khan of the

Mongols, under the title Genghiz Khan. Four years later he attacked the Kin Empire, and began a war which only ended with the ruin of that state.

No nomad people has ever attained a fame equal to that of the Mongols, and Genghiz Khan and his sons ruled over a wider land empire than has ever been formed before or since. This achievement, truly astonishing for the obscure chief of an obscure tribe, has provoked the admiration of soldiers and military historians, who acclaim Genghiz as one of the greatest soldiers of history. It is, however, the only title to greatness which he or his people can claim. The Mongol conquests were in every respect an unmitigated curse. They destroyed everything worth preserving in the civilisations of western Asia and north-western China, and saved only the elements in those civilisations which the world could well spare, cruelty, brutality and poverty.

They contributed nothing, except a new standard of ferocity and a rule of warfare which practised cold-blooded massacre on the grandest scale. Genghiz Khan laid down the rule, which his successors maintained, that any city or town which loosed a single arrow or stone in its defence should be refused any composition, and even if it surrendered, the inhabitants, combatants and non-combatants alike, should be exterminated to the last man, woman and child. By these methods of massacre and terror the Mongols conquered the whole of west Asia, Russia and eastern Europe. Only the death of the Great Khan Ogotai, Genghiz's son and successor, prevented the invasion of western Europe. The news reached the Mongol generals after Hungary had been laid waste, just as they were preparing to attack the Holy Roman Empire. But for this accident, which recalled the Mongol leaders for the election of another Great Khan, Europe as a whole would have certainly experienced the destruction and ruin which had already overwhelmed Asia.

Although the Mongol throne was transmitted in the family of Genghiz Khan, it was in theory at least, elective, and each new Great Khan had to have his authority confirmed by a Kuriltai, or diet of the nation. In other respects the Mongols conserved the barbarous customs of their nomad ancestors longer than other steppe people who had come in contact with civilisation. They

practised unlimited polygamy, or rather the only limit set to the number of a Mongol's wives was his capacity to support them. Genghiz himself had more than five hundred. As had been the custom of the Turks in the T'ang period, every Mongol married all his father's widows except his own mother, and also all the wives of his deceased brothers.

With such an ample provision for legitimate marriage it was quite natural that the Mongols regarded adultery as a serious crime, which was punished with death. Every Mongol male was a soldier, and, apart from hunting, he was not allowed to engage in any other occupation Even domestic service was forbidden to the Mongols, and all such duties were performed by captive slaves. In consequence of this law they employed great numbers of foreign captives and adventurers in the administration of the kingdoms they conquered. The army alone was Mongol, the civil service was recruited from all the nations of Asia and Europe with which they came into contact Marco Polo, who served Kublai for seventeen years, was a typical example and his colleagues were Muhammadans from Persia and Iraq, Georgians, Armenians, Indians, as well as Chinese and Koreans.

The Mongols were an uncleanly people They were in fact expressly forbidden ever to wash or bathe from the cradle to the grave, and also forbidden to wash anything in running water. They were extremely addicted to alcohol, and drank to excess. This vice is still a characteristic of their descendants, the Mongol tribes of to-day, who are rapidly diminishing partly in consequence of their partiality for vodka and imported brandy. The outstanding characteristic of the Mongols was their inhuman cruelty, or rather their total lack of any human feeling of pity. Genghiz himself expressed the Mongol idea of happiness: "The greatest joy is to conquer one's enemies, to pursue them, to seize their property, to see their families in tears, to ride their horses, and to possess their daughters and wives"

The Mongol invasion of the Kin Empire began in 1210, but, although Peking was taken, the inhabitants butchered, and the city burnt, three years later Genghiz himself left his generals to complete the task, and set out to conquer western Asia. Returning from these campaigns in 1224, he fell upon the

kingdom of Hsia, which was utterly destroyed. According to the Chinese history not more than one hundredth part of the population survived, the countryside was covered with human bones, the cities left desolate. The north-west has never recovered from this disaster. Many of the border cities were never re-occupied, and have been invaded by the drifting sands of the desert. The irrigation works fell into decay from lack of attention, and the country reverted to steppe. A region which in T'ang times had been wealthy and cultured, as the Buddhist sculptures and cave monasteries prove, became a semi-desert, the poorest and most backward part of the Chinese Empire.

Genghiz Khan died in 1227, but his successors continued his policy of conquest by terror and massacre. Indeed, but for the intervention of a man who deserves a wider fame, the extermination of Hsia would have been followed by that of all the provinces of China. When Genghiz returned from the west and invaded China, the Mongols were disgusted to see the whole country cultivated, and no pasture available for their horses. "Although we have conquered the Chinese," they said, "they are of no use to us. It would be better to exterminate them entirely, and let the grass grow so that we can have grazing land for our horses."

Genghiz was about to put this plan into operation when he was dissuaded by Yelu Ch'u-ts'ai, a descendant of the former royal house of the Kitans, who had been taken prisoner by the Mongols at Peking, and entered their service. This remarkable man, who although of Kitan descent was a fervent admirer of Chinese culture and Confucian doctrine, was the only counsellor who ever succeeded in dissuading Genghiz Khan from committing a massacre. He had already induced the conqueror to leave India, by playing upon the Mongol's superstitions. He now saved China by pointing out that if the Chinese were allowed to exist the Great Khan could draw a vast revenue from the conquered country, which would suffice to supply the Mongols with all the comforts and luxuries which they could never obtain in the steppe.

Genghiz followed this advice. The Chinese were taxed instead of being butchered, and the Mongols soon made their tents of the richest silks, and decorated their weapons with gold and jade

Ogotai, Genghiz's successor, also listened to Yelu Ch'u-ts'ai. In 1233, after a heroic defence, K'ai Fêng Fu, the Kin capital, formerly that of the Sung, was forced to capitulate. The city, in which everyone who could flee had taken refuge, was packed with more than a million refugees, almost the entire population of the surrounding provinces, if the Chinese history is to be credited. As it had defended itself desperately, all these lives were forfeit according to the Mongol rule of war. Subutai, the general who had conducted the siege, sent word to Ogotai demanding permission to butcher the inhabitants in the usual way. Yelu Ch'u-ts'ai saved K'ai Fêng by pointing out to Ogotai that all the skilful artisans and workmen of north China had fled to K'ai Fêng Fu, and a waste city was no use to an Emperor. If they were exterminated the Mongols would lose the value of their services The second argument did not move the Great Khan, but the first persuaded him to spare K'ai Fêng. It was the first time the Mongols had shown such clemency, and the credit for it must go to Yelu Ch'u-ts'ai, who realised that it was waste of time to appeal to Mongol humanity, since they had none, but that an appeal to their cupidity might have good effects If, as Gibbon remarks, "Mankind were accustomed to bestow upon their preservers the fame which they lavish on their destroyers," the name of Yelu Ch'u-ts'ai would be infinitely more honoured than that of the savage he served

Thanks in part to the counsels of Yelu Ch'u-ts'ai, the centre and south of China escaped the worst horrors of the Mongol conquest. The Sung Empire, indeed, remained untouched until many years after the death of Genghiz, for it was screened to the north by the Kin and the Hsia kingdom. Once this barrier was removed the fate of the Sung was merely a question of time. As the last Kin Emperor warned them, when he appealed in vain for an alliance: "We are to you as the lips are to the teeth, when the lips are gone the teeth will feel the cold"—a saying which has become proverbial.

Nevertheless the conquest of the Sung was more gradual and marked by fewer massacres than the invasion of the north. Ch'ang Chou, in Kiangsu, not far from Nanking, was the worst sufferer The city, having dared to resist, Bayan, the Mongol

general carried it by storm and exterminated the inhabitants to the number of over a million. No doubt here, as at K'ai Fêng, the people from miles around had flocked into the walled city for safety Hang Chou, capital of the southern Sung, capitulated and was spared. Marco Polo, who calls the city Quinsay, has left a famous description of its glories, as seen a few years later.*

The invasion of the Sung Empire began in 1235, but the last Sung pretender was not destroyed until 1279, the date from which the reign of the Mongol Yüan dynasty is reckoned. In actual fact the establishment of a separate Mongol Empire over China coincides with the accession of Kublai Khan and the foundation of a new capital at Peking in 1263. Karakorum, in outer Mongolia, where the earlier Great Khans had held their Court, was now abandoned, and the cohesion of the vast Mongol Empire was relaxed The conversion of the western Mongol khans to Islam in 1295 definitely marked the end of the Mongol world Empire, of which Kublai was the last nominal sovereign (Map 13.) The Moslem khans refused to recognise his successor as suzerain, since he was a Buddhist, and thus an infidel.

Although the western khans were practically independent throughout Kublai's reign, the Mongol Empire appeared outwardly to be stronger and more formidable than ever This Great Khan followed up the conquest of South China by invading Burma and Cochin China. In the latter country, however, the Mongols met disaster. Invincible in the field, they could not support the moist heat of the tropical jungles. The people of Champa, the modern Cambodia, though unable to meet the Mongols in battle, harried them with guerrilla warfare in the jungle, until the Mongol army, riddled with fever, was forced to abandon the campaign. The attempt to invade Japan was also a total failure. Kublai's vast fleet, manned by Chinese seamen and

*The origin of Marco Polo's name for Hang Chou is uncertain. The Chinese name, Hang Chou, is certainly not to be distorted into "Quinsay." One suggestion is that the name in common use was *Ching Shih,* meaning "the capital," which the Venetian distorted into Quinsay It has also been suggested that this name represents *Hsing tsai*, "the travelling palace," or "temporary capital," a term used to denote the place where the Emperor resides when away from the capital The Sung did not recognise the loss of the north as final, and therefore termed Hang Chou, "Temporary Capital," Hsing tsai.

MAP 13. *The Mongol Empire under Kublai Khan.*

Mongol soldiers, was destroyed by a storm, and the survivors who landed on Tsu Shima were exterminated by the Japanese samurai.

Marco Polo was deeply impressed by the magnificence of the Great Khan, the cosmopolitan nature of his empire, and the wealth and civilisation of China Thanks to the intrepid Venetian the glory of Kublai has become a European legend, and he is perhaps the only Emperor of China whose name is commonly known in the west. From the Chinese point of view, the picture is rather different The empire over which Kublai reigned was largely ruined The figures of his census speak for themselves. Under the Sung the population of China had reached one hundred million, under Kublai, who ruled a far wider empire, it did not number more than 58,834,711 These figures, as in other examples of a Chinese census, refer only to taxpayers The vast decrease therefore reflects the impoverishment of the empire rather than a reduction in the actual number of the inhabitants. These figures were compiled in 1290, when most parts of China had been pacified for nearly a generation A census taken twenty years before would have yielded a much smaller total.

European readers of Marco Polo admired the tolerance of the Great Khan, who employed Christians, and Moslems, Buddhists and Taoists, and men of all nations according to their capacity, regardless of race and creed. To the people of Moslem Asia and Christian Europe of the Middle Ages this attitude was indeed novel and enlightened, but in China tolerance was no new thing, and the policy of the Mongol conquerors was the policy which every Chinese dynasty since the Han had consistently employed. There was, however, this difference, that whereas the Chinese Emperors tolerated foreign religions out of indifference, and employed foreigners for their skill in strange arts and crafts, the Mongols used aliens out of policy, fearing to give authority to the natives of the land.

In consequence the Mongol administration was unsympathetic to the people, the officials corrupt and ruthless. Ahmet, Kublai's Muhammadan finance minister, provoked such hatred by his peculation and extortion that he was assassinated by a Chinese patriot in the palace itself. The favour shown to the Buddhists,

and in particular to the alien Tibetan Lamas passed all bounds Priests who murdered and robbed were not brought to justice. Palaces and lands were conferred upon Buddhist temples, and they were exempted from taxation The corruption of the civil service was so great that under Kublai's successor more than 18,000 officials had to be degraded for venality The Mongol Empire, established by terror, remained peaceful only as long as the conquerors themselves remained formidable After the death of Kublai (1294) the decline was rapid

His successors were both weak and short-lived. In less than forty years, 1295 to 1333, seven emperors succeeded each other on the throne, many dying by violence as the result of palace plots. The tale of the dynasty was completed by the long reign of Togan Timur, 1333-1368, a voluptuary who reigned in Peking over an empire rapidly dissolving into chaos under the waves of revolt which heralded the Chinese reaction. Bayan, the last Emperor's minister, contributed not a little to the rising unrest A Mongol, he was a violent hater of the Chinese At his instigation many vexatious laws debarring the Chinese from wearing certain colours in their clothes, using certain characters, such as those for long life and happiness, and from learning or speaking the Mongol language, were passed Finally, he proposed to revive the project of mass massacre He suggested that all Chinese of the surnames Chang, Wang, Liu, Li and Chao, should be exterminated. These are the most common names in China, and would have accounted for nine-tenths of the population.

The Emperor did not feel strong enough to employ this typically Mongol solution of his difficulties

In 1348 the rising unrest broke out in open rebellions which did not cease thereafter until the Mongols had been driven out of China by the victorious founder of the Chinese Ming dynasty. The Mongol resistance was feeble. At the end (1368) the last Great Khan fled from Peking without a fight and took refuge in his ancestral steppes, hunted northward by the generals of the Ming Emperor The Mongol dynasty, founded on terror and butchery, passed away after only eighty-nine years, leaving behind it no lasting or valuable contribution to Chinese civilisation, but having destroyed much that was irreplaceable.

Chapter XXII

SUNG PAINTING

In postponing any discussion of Chinese painting to a chapter included in the Sung section of this book it was not intended to imply that the art did not flourish before the 10th century A.D. Merely as a matter of convenience each branch of Chinese art has been treated in a separate chapter under the period in which this particular art attained its apogee. Moreover, although there is evidence to show that painting in the T'ang, and even pre-T'ang periods equalled the finest work of the Sung masters, only a very few genuine works of these early dynasties have survived. Sung originals are more numerous, though all too scarce. Later paintings are more plentiful: there are many fine works of the Ming period extant, but by that age the art was tending to become imitative. Painting in the Sung dynasty touched perfection and has never been surpassed or even equalled in later times. It was, moreover, the chosen mode of artistic expression in that age, revealing better than any work of literature, the spirit of Chinese civilisation, mature and refined, before the Mongol cataclysm laid waste the eastern world.

Painting, however, had a long history before the Sung dynasty. Chinese literature abounds in references to artists of great merit in the earliest, indeed, in legendary times. These stories can be safely ignored, not only because no work of such antiquity exists to confirm them, but also because there is very strong ground for assuming that painting, as opposed to decorative design, cannot have been practised before the Han dynasty. This dogmatism is possible because it is known that the invention of the writing brush, which replaced the stylus, can be dated to the Ch'in dynasty, the reign of Shih Huang Ti, the First Emperor (221-210 B.C.). The story which attributes this far-reaching change to the initiative of the general Mêng T'ien need not be taken literally. Possibly Mêng T'ien accorded his patronage to the invention of someone less eminent. It can be accepted as a fact that one of the many revolutionary changes introduced by the First Emperor and his counsellors was the use of a new instrument for writing, with

all the important consequences to calligraphy and the arts which followed

This question of the use of the brush for writing has a closer relation to the history of Chinese painting than may appear at first sight It is the cause of the chief technical difference between Western and Far Eastern art In Europe the divorce between calligraphy and painting is complete, and has been so ever since the quill pen became the instrument of writing In China, on the contrary, the use of an identical instrument for writing and painting, the brush, linked the two arts with an indissoluble bond, the ultimate consequences of which were not altogether happy. Calligraphy became an art, but art, in the decadent period, sank to something not far above mere calligraphy.

The adoption of the brush as the instrument of writing thus exercised a very profound influence on Chinese culture. It completely altered the manner of writing characters, and the style of the script The bone inscriptions and the bronze inscriptions of the Shang and Chou period are written in a scratchy angular style, which could never have made a great appeal to the artistic feelings of the beholder. With the brush all this was changed. Graceful curves, thick and thin lines, a flowing continuity transformed the written character into a work of art, and give calligraphy a place in the Chinese culture which has no parallel elsewhere, even in the illuminated manuscripts of Mediæval Europe Fig 56 shows a few examples of ancient seal characters and their modern equivalents.

'horse'	[seal character]	馬
'bird'	[seal character]	隹
'anxious'	[seal character]	悤
'seize'	[seal character]	取
'door'	[seal character]	門

FIG. 56. *Ancient and modern types of script.*

It is pointless to ignore, or deride, the value of the calligraphic art in Chinese eyes No European, perhaps, will ever be moved by a scroll of characters from the greatest master as he may be

moved by a somewhat mediocre painting from the same hand. To deny the existence of the Chinese art of calligraphy or to assert that its influence upon painting has been wholly bad, and a symptom of the later decadence, as some western critics have done, is to repudiate all belief in the Chinese æsthetic tradition as known to the Chinese themselves, and to pronounce an uninstructed judgment in the traditional phrase of the Philistine: "I know what I like." Had the quill pen become the instrument of writing in China, as it might well have done, the subsequent history of Chinese calligraphy and painting would have been entirely different. This possibility is, however, irrelevant. As a matter of historical fact, calligraphy and painting were closely associated and reacted upon each other throughout the course of Chinese history and not merely in the decadent period.

Painting, indeed, was probably an outcome of the use of the brush for writing. From the first, and in all subsequent times it was an art practised by the educated class, the class who from childhood were taught and trained in a masterly dexterity with the brush For this reason painting as a scholar's art has received the minute attention of historians and men of letters The lives and even the detail of the works of painters long dead, and now unrepresented, are recorded These accounts make plain how very few Chinese artists were men without education, or of humble origin, not because talent did not exist among the poor, but because the common use of the brush for writing and painting gave the man educated in brush work for writing characters an immense advantage and a long and arduous training

A more remote consequence of this link between writing and painting appears in the choice of subjects favoured by Chinese artists. The literary subject, far from being contemned was very frequently employed, although the fact is not necessarily apparent to observers unfamiliar with the vast storehouse of Chinese literature Landscape, for example, is a literary subject to the Chinese artist, on account of the strong and old tradition associating wild scenery with the hermit scholar, and the symbolism connected with pines, rocks and running water. The Chinese genius in the great periods was not fettered by these associations The artists of the T'ang and Sung painted not only landscapes, but

every variety of subject. When inspiration began to fail under the Ming dynasty the literary side of the partnership between calligraphy and painting gradually became dominant Brush technique, of the first importance in calligraphy, came to be the crucial test in judging painting, to the detriment of subject, inspiration and feeling In the calligraphic art the meaning of the characters chosen—a classic text or a poem—was less important than the manner of execution, for the subject was never original, only the treatment was proper to the artist The transference of these standards to painting was the fatal perversion which befell Chinese art in the decadence. In this latter art, known as *wên jên hua*, "scholar's painting," an all-too apt designation, it is the number of brush strokes and the manner in which they are applied that supply the criteria for judgment. Subjects are of little or no importance, the picture, whether landscape, flower painting, or a human subject is made to a formula in which brush technique alone counts This over-refined art is often extremely decorative and graceful, but it has not the strength and freedom found in the works of the Sung masters.

No Han painting on silk has survived, but among the finds made at Lak Lang in Korea there is a painting on lacquer, done upon the lid of a tortoise-shell box The execution is fine and mannered, showing little trace of primitive awkwardness It has great interest as a concrete proof that the Han painting mentioned in literary sources had a real existence, and had passed beyond the rather simple conventions of the contemporary bas-reliefs. The phœnix shown in Fig 57, a polychrome painting in tempera on the lid of a cosmetic box (*lien*), is also Han work and illustrates the high level of draughtmanship in that period.

A picture attributed to a great master who lived only 150 years after the fall of the Han Empire would, if an original, confirm the supposition that the art of painting flourished in the Han dynasty. Ku K'ai-chih (*circa* A D 364) lived under the Tsin dynasty which succeeded the Han, and, in the opinion of all critics in the T'ang and Sung periods he was the first and greatest of the early painters known to them. In the 12th century, when the *Hsüan Ho hua p'u*, the catalogue of the imperial collection in the Sung palace was compiled, nine pictures attributed to

FIG. 57. *Han painting of a phœnix on the lid of a lien (box).*

Ku K'ai-chih still existed A picture which has been claimed to be one of these: "Admonitions of the Imperial Preceptress," which bears the seals of the artist Emperor Hui Tsung of the Sung and of Ch'ien Lung of the Manchu dynasty, is now in the British Museum.

Binyon writes of this picture:

> "The basic character of design agrees with what few relics of pictorial art, previous to the T'ang era and subsequent to the Han era, remain for comparison The basic character of design is the same as in the 6th century Tun-huang frescoes, though the frescoes are in rather provincial style . . When we add that the types, the costumes, and the style of painting are unlike any later Chinese work known to us, there can be no reasonable doubt that the picture represents the art of the 4th century. Most scholars have presumed it to be an ancient copy. . . But that it is a copy is hard to believe."*

**Painting in the Far East* 4th Edition 1934 pp 46-7 M Pelliot, on the other hand, regards it as being of the 6th century.

The importance of this picture, apart from the astonishing fact of its survival for so many centuries, is that at this period, the Tsin dynasty, Buddhism was only beginning to permeate Chinese culture. As yet the new religion, though rapidly spreading, had not had time to exercise a deep influence on the artistic tradition inherited from the Han period, to which the Tsin dynasty is really a kind of postscript. If, as was once supposed, painting was introduced to China with Buddhism, it would be natural to expect to find a strong alien touch in the earlier works, and exclusively religious subjects If this picture is a 4th century work it proves that this was not the case. The style is wholly Chinese, and the subject secular "The Admonitions of the Imperial Preceptress" illustrates a literary subject; the advice given to the consort of the first Emperor of the Tsin dynasty, Wu Ti (A D 265-290).

The period of the Six Dynasties, the partition of China between the Chinese dynasties ruling at Nanking and the Tungus dynasties at Lo Yang and elsewhere in the north, does not seem to have been unfavourable to art. Buddhism, strong and vigorous as a new religion, was patronised at both Courts. Artists were encouraged by the cultivated rulers at Nanking and their services were constantly required to paint pictures of the Buddha and the Bodhisattvas. Ku K'ai-chih is known to have painted many religious pictures, which probably all perished with the temples in which they were displayed The religious influence in painting was strong and continuous, lasting through the T'ang dynasty to the Sung, but it was never dominant. The Chinese painter was not, like his early Italian successor, forced to fit his talent to a dictated subject, or a narrow range of sacred themes from which he must not stray. Artists in China were also men of education and scholarship, not infrequently high officials at Court. They painted as they pleased, and if they often painted religious pictures it is a proof, among many, that Confucian scholarship and Buddhist piety were not so utterly incompatible as later Confucian purists have tried to maintain.

Literary notices by later critics are all that now remain to prove the value of the Six Dynasty painters' art. One of these

artists, Hsieh Ho, who lived towards the end of the 5th century under the short Ch'i dynasty of south China, has left the first treatise on painting, including his "six canons," which have always been accepted as the standard of criticism in China. These canons he expressed in four word sentences, which are not easily translated into the terminology of western criticism As is often the case with Chinese prose, as well as with poetry, "the words stop but the sense goes on." The translations of the Six Canons of Hsieh Ho given here are those made by Professor Giles*:

THE SIX CANONS OF HSIEH HO (*circa* A D. 475).

1. Rhythmic vitality.
2. Anatomical structure.
3. Conformity with nature.
4. Suitability of colouring
5. Artistic composition.
6. Finish.

These were the qualities which a painting should possess if it was to be ranked in the highest class. It is perhaps unfortunate that Hsieh Ho did not express himself more clearly, for if he had listed the faults of painting as well as the qualities, the lesser artists of the Ming and Manchu periods might have avoided the error of concentrating upon his second and sixth canon to the exclusion of some of the others, particularly the first.

The T'ang dynasty was the golden age of the arts in China, more catholic in its taste and more direct and vigorous than the refined Sung. Painting, as can be proved by the few surviving T'ang originals, and by the unanimous testimony of Sung critics who had the works of T'ang masters before them, had reached as high a level as poetry T'ang poetry has come down to posterity almost complete, but only a haphazard selection of T'ang pictures, preserved by chance rather than by choice has survived the numerous calamities of 1,000 years. The greatest work of the T'ang painters was done at the capital, and much of it for the imperial collection For this very reason it has perished In the closing years of the dynasty Ch'ang An was repeatedly sacked, and finally utterly ruined. The assiduity with which the Sung

***An Introduction to the History of Chinese Pictorial Art* London 1918. p. 28.

imperial connoisseurs collected T'ang masters shows that these were uncommon even in the 11th and 12th centuries. An art treatise of the 12th century, the *Hua P'in* by Li Chih, says that works by Wu Tao-tzŭ, the most famous of T'ang painters, could not be found. This may be a slight exaggeration. There are pictures attributed to Wu Tao-tzŭ in existence to-day, and it is recorded that the Sung imperial collection had specimens of his work. Li Chih probably meant that they were so rare as to be unobtainable by private individuals.

A certain number of T'ang masters seems to have been preserved in Japan as well as China, for it was during the T'ang period that Japan was eagerly adopting the customs and culture of Ch'ang An. Religious paintings by great Chinese artists were taken to the newly founded Buddhist monasteries in Japan, and there in the fortunate seclusion of famous temples, some of them perhaps survived to the present day. It is true that experts are often in doubt whether these famous pictures are true originals or early copies. The point is naturally of great importance to collectors, but perhaps not quite so important for the history of Chinese and Japanese art. These copies may be weaker than the originals, but they preserve the style and the design of the painter and provide evidence for judging other works attributed to the T'ang period.

The records of the T'ang dynasty have preserved long lists of artists and the titles of their works, notes on their style, descriptions of the pictures themselves, and the circumstances in which they were painted. A whole literature of art, the paintings themselves being all that is lacking. There are a few artists, however, still represented either by originals or early copies, and others whose influence on later work is attested by Sung critics. These famous names cannot be passed over without a mention.

Yen Li-pên lived in the early years of the dynasty, the first half of the 7th century, and was a high official at Court. He was a prolific painter, and some of his works were still extant in the 12th century. The designs from which the bas-reliefs of T'ai Tsung's chargers were carved are attributed to this artist.

Han Kan was also a painter of horses famous in the T'ang period. He is one of the few Chinese artists of humble origin. He was as a youth employed as a pot-boy in an inn near the capital.

Wang Wei, a renowned artist to be mentioned presently, frequented the inn, and discovered the boy's talent. With the generosity of the true artist he took Han Kan under his patronage and paid for his education In later life he became famous and was employed by the art loving Emperor Ming Huang Although he painted religious pictures, as did all the artists of his time, it is for his horses and hunting pictures that he has remained famous. Fifty-two of his pictures were in the imperial collection of the Sung dynasty at the end of the 12th century. Han Kan's work exercised a deep influence on the early Japanese painters, and as the poet Tu Fu testifies, he was highly esteemed by the most refined spirits at Ming Huang's capital

Another contemporary of the Emperor Ming Huang was Wu Tao-tzŭ, who, in the opinion of Chinese and Japanese critics is the greatest master of painting in the history of the Far East. In the Sung period over ninety of his pictures were listed as belonging to the imperial collection, but it is doubted whether at the present time any original works survive One, which was long accepted as genuine, though now suspected as an early copy, is, like many other early Chinese pictures, preserved in a temple in Japan (Plate XII.)

Whether an original or early copy this wild fantastic landscape, inspired probably by the rugged scenery of northern Szechuan, is characteristic of what is known of T'ang landscape painting, in which the splendour and romantic side of nature was emphasised, and even exaggerated The towering rocks and rushing stream dominate the composition, while the only human figure, the fisherman with his basket, is dwarfed by his awe-inspiring surroundings. Man was not the centre of this artist's world, his place in the cosmos was insignificant.

Li Ssŭ-hsun, a great grandson of the first T'ang Emperor, was regarded as the greatest master of landscape painting before the Sung period Ou-yang Hsiu, the scholar, poet and historian, writing in the 11th century, declared that Li had no equal in landscape painting, either in his own period or subsequently. This opinion, of course, was written before the greatest Sung landscape painters had been born. Li Ssŭ-hsun and Wang Wei (who was equally celebrated as a poet) are regarded as the

founders of the Northern and Southern Schools of landscape painting respectively They were contemporaries, Wang Wei, born in A D 699, being the younger man.

The terms Northern and Southern in landscape painting have led to a deal of misunderstanding They are not used in a geographical sense to imply that the followers of one school were men from the north of China, or *vice versa*, nor yet that their style was inspired by the scenery of the north or south The Chinese have a habit of classifying everything either by a number, as the "eight virtues" and the "hundred names," or by a geographical term. This does not mean that they consider the virtues limited to eight in number, or that there are only one hundred surnames in use, it is an idiom of the language Similarly geographical terms carrying no territorial connotation are used to distinguish between categories of ideas The real difference between the two schools of landscape painting was technical, a question of brush work The "Northern school" used strong vigorous strokes, the "Southern" a more delicate, intimate touch.

Those who followed the style of Li Ssŭ-hsun called themselves the Northern school, or more properly, called his manner of painting the "Northern" manner, for artists did not adhere rigidly to one style, but sometimes painted in both The question of the "Northern" and "Southern" schools, or styles, would not be very important if it did not lend itself to an easy confusion between the painters of the northern Sung dynasty with its capital at K'ai Fêng Fu, and the later painters of the Southern Sung, who worked at Hang Chou. The geographical position or origin of the artists has nothing whatever to do with the "Northern" and "Southern" schools As a matter of fact Wang Wei, regarded as the founder of the Southern style, was born in Shansi in north China, and did most of his work in retirement at his native place.

In spite of the ruin of Ch'ang An at the close of the T'ang dynasty, many T'ang pictures escaped destruction and were still to be found in the Sung period The troubled age of the Five Dynasties, the first half of the 10th century, which intervened, did not interrupt the artistic tradition established by the T'ang masters. During this half-century the southern provinces were divided among several small independent kingdoms which

were on the whole free from the incessant wars and revolutions which disturbed north China under the Five Dynasties proper. It was to these southern Courts, asylums of culture in a troubled world, that the surviving artists and poets of the T'ang retired At the Court of Shu, a state comprising Szechuan province, poets such as Wei Chuang maintained the literary traditions of the fallen empire, and a few years later an artist of the first rank, Huang Ch'uan, worked in the same state Huang Ch'uan was especially noted for his painting of flowers and birds, subjects for which he no doubt found endless inspiration in the garden province of China, the really "flowery land" of Szechuan A painting attributed to him, "Fowls and Peonies," is in the British Museum

When peace and unity were restored under the Sung dynasty the artists who assembled at the new capital, K'ai Fêng Fu, had a living tradition to work upon Painting was not the monopoly of the Sung period. If we had more T'ang pictures to compare with the Sung masters it is possible that the earlier art would prove superior to the Sung, at least in certain qualities of strength and vigour The Sung inherited a great tradition but they did not merely imitate earlier work In the absence of sufficient T'ang pictures to form a judgment it is perhaps untrue to say that Sung landscapes had never been equalled by the T'ang painters Ou-yang Hsiu, as has been pointed out, held Li Ssŭ-hsun superior to the early Sung masters Nevertheless it is certain that Sung work is of unsurpassed excellence, and reflects the changed spirit of the new age. The painters of this dynasty were very numerous and the range of subjects very wide If more emphasis is given to the Sung landscapes than to the religious and other pictures of this period it is because Sung landscapes are in a class apart, unrivalled in their own Far Eastern art and unequalled in the painting of any other land.

More clearly than any other pictures, or any other branch of art these landscapes reveal the wide difference between the Western and Chinese artistic traditions in the past, and at the same time they appeal to the modern European more than any other Chinese work of art. This paradox is easily resolved. Until the 19th century, the West had no feeling for wild nature other

than one of marked aversion. No one admired the English Lake scenery before Wordsworth. In the 17th century the West Highlands, the Alps and the Pyrennees were shunned by men of taste. Mountains were "horrid rocks," moors, "blasted heaths" This aversion to untamed scenery has been explained by the insecurity of the times, mountains and wastelands were associated with brigands and highwaymen. It has been suggested that an efficient police force is the foundation of a delight in wild nature

This explanation is refuted by the fact that in China, where mountains have always been the haunt of bandits, and the dangers of travel at least as great as in renaissance Europe, poets, painters and scholars of the highest intellectual status have for centuries delighted in the wild beauty of the high hills and frequently retired from the comforts of civilisation to some remote mountain solitude. Perhaps an appreciation of natural scenery uncontrolled by the work of man is a product of long and continuous civilisation, of sophistication in fact, which is only achieved after many generations of culture In China that point had been reached by the educated class in the T'ang period, and was a universal attitude in the Sung dynasty. In Europe, where the cultural tradition was set back by the Dark Ages after the fall of the Roman Empire, it was not attained until the end of the 18th century.

To the European of to-day the Sung landscapes seem "modern" because, in spite of a different artistic tradition they are products of a people on the same level of artistic culture as ourselves. The 17th century would not have appreciated them. Indeed the early European travellers to the Far East never thought of bringing home pictures, although they admired and imitated other Chinese works of art. It was not only because Chinese art followed a different convention to that of the West, but because the spirit which informed the landscape painters of China was then alien to European taste. To the modern the Sung landscapes are a revelation. Better than any detailed history or work of literature one Sung landscape will illuminate the gracious spirit of that refined and sophisticated age, soon to be overwhelmed in the Mongol invasion from which, in art, there has been no recovery.

Li Ch'êng (*circa* 970), who claimed descent from the imperial clan of the T'ang dynasty, was one of the first great

landscape painters of the Sung period One of his pictures now preserved in the Palace Museum at Peking is reproduced in Plate XIII The subject, "Woods in Winter," is a fine example of the Sung style, intimate and restrained, in contrast with the Wu Tao-tzŭ illustrated in Plate XII; Li Ch'êng's picture shows nature in less fantastic guise The distant hills form the background, and the real subject is the group of pine trees overlooking the valley In Chinese painting the pine has a symbolical meaning which made it a favourite subject with the artists of the Sung age. The straight stemmed pine with its gnarled and twisted branches, standing isolated upon the edge of a ravine, typified the scholar-official, who, though he might be shaken by the wind of calumny and misfortune, remained erect and steadfast, his character rooted in the unchanging principles of Confucian virtue

The 11th century, which in Europe was almost the nadir of culture, was one of the greatest periods in the history of Chinese art, and the crown and glory of the age was the reign of the artist Emperor Hui Tsung (1100-1126). Although neither a wise nor successful ruler, the Emperor was both a devoted patron of all the arts and a painter of high rank himself He lavished upon pictures and ceramics the care and attention which he denied to affairs of state, and, while his name is remembered in history as that of the last northern Sung ruler who ended his life in captivity among the Nuchen Tartars, in art he holds rank with his equally unfortunate predecessor, Ming Huang of the T'ang dynasty.

Hui Tsung founded the first academy of painting in China and organised it on the model of the Confucian college Degrees were awarded at the T'u Hua Yüan, and the Emperor himself instructed his pupils, adjudged their works, and set the subjects for competition. Many of the academicians are well known painters of the period, and a significant indication of the fame of this institution is the far off places from which they came. Li Ti, who was painting there in 1119, was a native of Yunnan, then an uncivilised border region mainly inhabited by aboriginal tribesmen

The Hsüan Ho Hua Yüan, the Imperial Gallery which Hui Tsung enriched and enlarged, contained at that time the finest

collection of paintings which has ever been assembled in the Far East. A catalogue of its contents was published in the last years of the northern Sung, and this work mentions the titles of no less than 6,192 pictures* which were kept there. Many of these pictures must have been by contemporary or recent artists, as it is known that T'ang paintings were becoming rare In this gallery, no doubt, the Emperor's own pictures, some of which still survive, were shown. Plate XIV reproduces a bird study by Hui Tsung, now in Japan. This "Pigeon on a Peach Branch" is typical of the Chinese treatment of animal subjects. There is close observation, and real understanding of nature, and yet no attempt to introduce human feeling and emotion. An artist who had such intimate sympathy with wild life cannot have found his exile in the Manchurian wilderness wholly insupportable.

Li Kung-lin, who is usually known by his pen name, Li Lung-mien, was born about 1070, and died in 1106, shortly before the Kin invasion He was one of the greatest Sung painters, and also a brilliant scholar and high official The last years of his life were spent in retirement at a country estate opposite the Dragon's Face hill (Lung Mien Shan), from which he took his pen name A certain number of his pictures survive, one of which, a "Khotani Groom and Horse," is reproduced in Plate XV. In this picture the foreign type, which is so often emphasised by Chinese artists, is drawn with sympathy and the prominent features are not exaggerated.

The disaster which befell the Sung Empire in 1125 did not extinguish the artistic inspiration. When the Court was re-established at Hang Chou, the artists and scholars who had fled from K'ai Fêng maintained the tradition which had been the glory of the northern Sung, and, indeed, excelled their predecessors. Two of the greatest landscape painters, Ma Yüan (1190-1224) and Hsia Kuei, who was his contemporary, belong to this period. The new capital, Hang Chou, stands upon the shores of the West Lake, in the lovely country of Chekiang The immediate vicinity of the city is one of the most celebrated beauty spots in China, scenery so often painted that it has become immortalised—and vulgarised—in the all too familiar "willow

*_Hsüan Ho hua p'u_, author unknown.

pattern " Living in these surroundings the artists of the southern Sung could not fail to find inspiration for their unsurpassed landscapes

The panoramic roll, which depicts a wide stretch of varied country, was a favourite form with these artists. Such rolls, which may be many feet in length, are intended to be kept in a box and unrolled slowly, so that the beholder seems to follow the artist in a journey across mountains and rivers Hsia Kuei's roll of the Yangtze is one of the most precious treasures of the Peking Palace Museum. It covers the whole upper course of the Great River, from the wild mountains of the Tibetan border where rocks and cliffs pen the river in a narrow gorge, down to the wide and tranquil valley of the middle reaches. Beginning among the rapids and defiles of the upper course every type of scenery and all the life of the great river is shown; famous cities and temples built high up on projecting bluffs, ships rushing down stream among the "boiling water" of the dreaded rapids, or toiling painfully up against the current. Fishermen in little boats ply their trade in the sheltered creeks, and wayfarers mounted or afoot follow the rock-hewn road which winds along the face of the gorges.

Another famous panoramic roll, "The Ch'ing Ming Festival at the River," by Chang Tse-tuang, dated A.D 1101, is one of the clearest pieces of evidence for an important social change which occurred in the period of the Five Dynasties and the Northern Sung, the practice of sitting on chairs instead of on floor mats The introduction or development of the chair in China, possibly influenced from a foreign source, had begun many centuries earlier in the period of division following the fall of the Han empire. Chairs or stools were at first exclusively confined to the camp, and never used in the house. Later, in the T'ang period they became popular for use in the garden. It is not until A.D. 960 that an extant picture from the very end of the Five Dynasty epoch shows a fashionable evening party held in the home of a Court grandee, in which the room is fully furnished with chairs, couches and tables.

The panoramic roll of Chang Tse-tuan shows that rather more than a century later this new habit had become general. The roll shows the people of the capital, K'ai Fêng, streaming out of the

city to enjoy the spring festival upon the banks and waters of the Pien river. In open-air restaurants, as in the houses of the citizens, chairs and tables are shown in general use, the styles of such furniture differing hardly at all from their modern successors The custom of sitting on floor mats, still followed in Japan, seems to have died out in China in this period.

The Mongol conquest, which imposed cruder values than the æsthetic ideals of the Sung scholars, brought the great age of painting to an end In the Yuan dynasty founded by the conquerors, there were indeed, some famous artists. Chao Mêng-fu (b. 1254), himself a descendant of the Sung imperial family, was really the "last of the Sung" although the greater part of his life was passed under the alien dynasty. His great fame rests upon his pictures of horses, a subject inspired by the nomad rulers of his time, but he also painted landscapes and nature studies With the passing of the generation which had directly inherited the Sung tradition, painting began to decline The later artists paying ever more attention to brush technique and becoming increasingly imitative in their choice of subject. Late art, though often delightful and decorative, rarely recovers the master touch of the Sung genius

PART SIX—THE MING DYNASTY

Chapter XXIII

THE CHINESE RECOVERY

WHEN the authority of the Mongol Emperors collapsed in the middle of the 14th century, China was overrun by rebel armies who not only stormed the fortresses held by the Mongols, but also pursued an internecine struggle among themselves. The incoherence of the Chinese revolt extended the term of the Mongol dynasty's power, but when the Chinese found an acknowledged leader of ability, the doom of the alien dynasty was certain. Several years of anarchy passed before the emergence of this leader, who won his way to the throne from the lowliest circumstances.

Chu Yüan-chang, who became the founder of the Ming dynasty, was born in 1328, the son of poor peasants in the Huai Valley, the country between the Huai and Yangtze Rivers. When still a boy his parents and almost all his relations died in a famine, and the orphan became in turn a shepherd boy, and then a Buddhist monk The cloister, however, did not satisfy his ambitions, he abandoned his monastery and became a beggar, turning, by natural transition, into a bandit In the ranks of the insurgents who were then multiplying on all sides, Chu Yuan-chang found his true vocation. He rose rapidly until he became commander of a large band, and then breaking with his nominal superior, set himself up as a partisan chief with independent ambitions.

Such a career is familiar enough from the history of all disturbed periods in China, not excluding the present day. Chu Yuan-chang only differed from many rivals in his ability to profit by his victories and consolidate the country he overran into a compact and orderly kingdom While the other bandit chiefs swept the country, sacking cities and seeking only to amass booty, Chu concentrated on capturing certain places, of real strategic importance, and using them as bases for a systematic extension of his rule. In 1356 he gained a decisive advantage by capturing Nanking, which became his capital and that of all China under the Ming dynasty.

In these early years Chu left the Mongol strongholds almost unmolested, turning his arms instead on the rival rebel leaders who had occupied most of the south-eastern part of China. After

ten years of campaigning Chu destroyed the last of his competitors, and became sole pretender to the throne and acknowledged leader of the Chinese insurrection. Thenceforward his progress was rapid. Two years later, in 1368, after conquering the whole of eastern China from Canton to Shantung, his general Hsu Ta advanced on Peking with an army said to have amounted to nearly a quarter of a million men The Mongol Emperor did not wait to be besieged. Before the city was invested he fled quietly to the north, abandoning China to the triumphant founder of the Ming dynasty Peking capitulated

Several years of warfare in the western and south-western provinces followed before the Ming dynasty was acknowledged in every part of the empire. The Mongol tribes, driven from China, still disputed the Ming conquest, and endeavoured to recover their lost empire, but the military ascendancy had now passed to the Chinese. In 1372 General Hsu Ta* crossed the Gobi, burned Karakorum, the old capital of Genghiz Khan, and advanced to the northern side of the Yablonoi Mountains, in the modern Siberian province of Trans Baikalia. No Chinese army had ever before penetrated so far north. In 1381 the Mongols were driven from Yunnan where they had remained in isolation since the fall of their dynasty. Ten years later the Ming armies occupied Hami in Central Asia and so completed the reconquest of the empire.

The Chinese reaction had thus carried the limits of the empire further to the north than at any period since the fall of the T'ang dynasty. Indeed, the Ming Empire was more extensive than any previous Chinese Empire. Liao Tung, or south Manchuria, was incorporated as an integral part of the province of Shantung. Yunnan and Kueichou, regions of the south-west, which had only been partially and fitfully occupied by the Han and T'ang rulers, became settled countries under the regular provincial administration Although a large aboriginal population remained in a state of quasi-autonomy in these provinces the cities and valleys became centres of Chinese colonisation.

*Hsu Ta's tomb can still be seen outside the T'ai P'ing gate at Nanking His official residence still exists in that city, where it is now used as the Ministry of the Interior.

The Ming armies had acquired a marked superiority over the Mongols and other nomad peoples, but the emperors of this dynasty never attempted to establish direct Chinese rule over Central Asia, or Chinese Turkestan They were content to hold Hami, the first city on the caravan route guarding the approach to the Chinese province of Kansu. The decline in the importance of this trade route was the reason why the Ming never followed the example of the T'ang and Han Emperors, who had spent their efforts for centuries in the conquest of Central Asia The rising importance of the sea route from the west and the devastation of the north-west by the Mongols, the effects of which remain evident to-day, made Turkestan of less value to China.

Chu Yuan-chang did not adopt the foreign policy of the T'ang Emperors, but in other respects he openly proclaimed that dynasty as his model. The government was organised on T'ang models, even the provinces were re-arranged to conform with the ten *tao* instituted by T'ang Tai Tsung, in so far as changes of population and territory permitted. It is in the Ming period that the present arrangement and names of the provinces took their origin, but, under the Ming, there were fifteen provinces instead of the eighteen established by the Manchus (Map 14). In view of the pre-war Japanese propaganda which treated the Manchurian region, renamed "Manchukuo" as a territory distinct from, and never having formed any part of, China, it is worth recording that the Ming province of Shantung included not only the peninsula of that name, but also the whole of the Manchurian region on the north side of the Gulf of Chihli, from the Great Wall up to Mukden, and as far east as the Korean border, then as now, defined by the Yalu River This territory was already fully occupied by settlers of Chinese stock The Ming province of Ching Shih, the modern Hopei, extended beyond the Wall as far north as Jehol City and the banks of the Liao River Except that certain of the modern provinces were combined to form one Ming province, the names and areas of the existing divisions are those determined by the Ming government.*

The practical spirit shown in these administrative changes was

*Shensi in Ming times included Kansu. Kiangsu and Anhui were combined as the province of Nanking, Hunan and Hupei as Hu Kuang.

MAP 14. *The Ming Empire.*

also manifested in less important matters Previous dynasties had been called after the classical names of the founder's native provinces, or the fiefs which they had held before obtaining the throne Thus, Liu Pang had named his dynasty Han because he had been King of the ephemeral state of Han during the interregnum following the fall of the Ch'in dynasty (Chapter

VI), and the first Emperor of the T'ang had been Duke of T'ang, a part of Shansi, under the Sui dynasty The Sung derived their name from a similar association with the eastern part of Honan, the ancient state of Sung, and the less famous dynasties had all followed the same practice The founder of the Ming, however, who had been a leader of bandits before he became Emperor, had enjoyed no such distinction, therefore in choosing a name for his dynasty he broke with the time-honoured territorial tradition and called it Ming, the brilliant dynasty.

He made another sensible innovation in the use of reign titles, the official style by which the reign of an Emperor was known and dated He abandoned the old custom of changing this style every few years, every Ming Emperor retained the same reign title for the full duration of his reign, and, in consequence, the Yung Lo period, for example, exactly corresponds to the reign of the Emperor Ch'êng Tsu. This had not been the case in earlier dynasties ever since the Han Emperor, Wu, introduced the use of reign titles The Ming sovereigns were therefore returning to the ancient practice of the Chou Kings and Ch'in Shih Huang Ti, who had dated their reigns consecutively under one style. There were obvious advantages in this change, for under the old practice one Emperor sometimes used as many as five or six reign titles in succession, each separately dated, making it impossible to know how long this sovereign had occupied the throne without a mathematical calculation. The Manchus followed the Ming custom and in consequence the habit has grown up of referring to the emperors of these two dynasties by their reign titles, which are really only the name of a period of years, and not of an individual. Such reign titles as Wan Li and Ch'ien Lung are now universally used in this technically incorrect way, and few Chinese would recognise Shên Tsung as Wan Li or know who was meant if the Manchu Emperor Kao Tsung Shun was called by his correct title instead of by his reign title of Ch'ien Lung As the reign titles of these emperors are familiar to Europeans from the date marks on porcelain, it would be tiresome and confusing to use the correct titles, and these sovereigns will therefore be referred to in the customary, though incorrect manner.

The capital of the Ming dynasty was at first situated at Nanking,

and the city, apart from recent improvements, stands to-day as Chu Yuan-chang rebuilt it * Although the palace itself was later destroyed, leaving only a ruined gateway to mark the site, the magnificent wall over twenty miles in length and more than 60 feet high, remains the longest city wall in the world. In choosing Nanking as capital the founder of the Ming was probably moved by the desire to fix the seat of government in the part of China with which he was most familiar, and from which he himself had sprung In fact, it was a wise choice which would have established the dynasty most securely had his successors maintained it

Since the fall of the northern Sung dynasty, when many thousands of the most influential and cultivated inhabitants of the northern provinces fled south of the Yangtze, the north had lost both its cultural and commercial importance. Nanking, on the Yangtze, easily accessible for tribute boats and merchant craft, was ideally situated to govern the most wealthy and populous part of the empire, and was at the same time protected by its situation against sudden raids from the northern frontier, while sufficiently central to keep in touch with the northern provinces. These are the considerations which have led the founders of the Chinese republic to move the capital back to the city chosen by Chu Yuan-chang

Unfortunately they were ignored by the third Emperor of the Ming dynasty, Yung Lo, who, following his usurpation of the throne, moved the capital to Peking. This change emphasised and exaggerated the principal internal weakness from which the new dynasty suffered, the increasing divergence between the north and south, and the consequent mutual hostility of the officials from these different parts of the empire The division between the two halves of the empire was now more marked than at any previous period. Until the south was colonised under the T'ang dynasty, and, subsequently enriched and civilised by the Southern Sung, there had been no significant rivalry between north and south, since allculture, power, and population had been

*There are large areas unbuilt upon inside Nanking's wall, but it is unlikely that all this ground was occupied by houses even in the Ming period. The wall was built to include hills of strategic importance as well as the actual city.

concentrated in the northern provinces of the Yellow River Valley. After the Kin and Mongol invasions the balance between the two regions was radically altered, the north was devastated, and the south became rich and populous.

Furthermore, a great emigration of the most cultured families occurred. Not only the Hakka or "guest families" of Canton took refuge in the far south, but also the famous scholar clans which had for centuries ruled the empire Up to the end of the northern Sung period the old double surnames, such as Ssŭ-ma, Ssŭ-tu, Shang-kuan and Ou-yang, names which as their meaning prove, originated in offices in the feudal period, were still common in the north, and prominent in public life To-day they are only found in Canton Since these clans mostly originated in Shensi and the Yellow River valley it is clear that the ancestors of their modern representatives were refugees from the north There is hardly a notable family in Canton which does not trace its descent to an ancestor who "crossed the Mei Ling," the great range dividing the Yangtze and West River basins. These migrations are almost always referred to the period of the Kin and Mongol invasions

By the Ming period this great change in the character of the two halves of the empire was only too evident It was found that the southern candidates secured a great majority of the higher places in the examinations for the civil service, while northerners were not even represented in proportion to the population of the north. The bitterness and discontent caused by these facts forced the emperors to allot one-third of the places to northerners irrespective of their success over their southern competitors, but the proportion which was deemed a fair division is itself very significant.

The move to Peking was a dangerous incentive to this rivalry. Yung Lo established the capital in the north because Peking had been his headquarters before he came to the throne, and it was from this region that he drew his support Judged by more enduring motives, Peking was a bad site for the capital. It is situated in a sandy and rather arid plain, without good waterways communicating with the wealth producing provinces. It is, moreover, only 40 miles from the passes through the Great Wall, by which nomad invaders have at all times swept down into China. Lastly, it is tucked away in the extreme north-east corner

of the empire, remote from the main centres of industry and population. This frontier site was a natural capital for invading conquerors such as the Kin and Mongols to choose. They remained in close touch with their homelands, inside the frontiers of the conquered empire, but not engulfed in the centre of a hostile population These advantages meant nothing to a Chinese dynasty, and proved, on the contrary, a serious danger

The moment the military strength of the government declined, the capital itself was exposed to the danger of enemy attack. It was not necessary for the nomads to undertake a formidable invasion of the heart of China, a sudden frontier raid was sufficient to menace the Court and disorganise the government. In consequence the Ming Court was constantly preoccupied with frontier affairs, to the neglect of the true interests of the empire Money and armies were needed to guard the exposed capital, which should have been better employed policing the interior provinces. The Court, isolated in the far north-east, lost touch with the sentiment and needs of the south and west, which, as time passed, became more and more indifferent to the Ming dynasty The position of the capital was one of the principal weaknesses of the dynasty, and the chief cause of its extinction.

Chu Yüan-chang, the founder of the Ming dynasty, known in history as Hung Wu, died in 1398, after a reign of thirty years, a period of stability at home and successful conquest abroad which should have inaugurated a long peace. Unfortunately his eldest son, the heir of the empire, died before coming to the throne, and the founder of the Ming was succeeded by his grandson, Hui Ti, a youth 16 years old. The authority of the young Emperor was almost immediately challenged by the most influential of his uncles, the Prince of Yen, who was in command of the northern frontier and resided at Peking. The new empire was thus ravaged by a long and destructive civil war within a generation of its foundation After a varying struggle in which the Prince of Yen was not uniformly successful, the Emperor's supporters dispersed and Nanking fell into the hands of the rebels (1402)

At the time it was generally believed that the young Emperor had lost his life in the burning palace, but it later became known that Hui Ti, disguised as a Buddhist monk, and attended by

only a handful of followers, had escaped from the city. In spite of the efforts which the Prince of Yen, now Emperor,* made to capture the fugitive, Hui Ti managed to avoid detection and lived the life of a mendicant monk, travelling all over China It was not until many years later, in 1441, that he was recognised, arrested and sent to Peking By that time the reigning Emperor was Chêng T'ung, great grandson of Yung Lo The aged monk was identified by an old eunuch, but the government, in order to keep the embarrassing discovery quiet, allowed Hui Ti to pass the last year of his life in peaceful obscurity at Peking

The disadvantages of Peking as a capital were not apparent in the reign of Yung Lo The Emperor was an experienced and capable soldier who had served for many years in the war against the Mongols He was always ready to take command himself when any nomad chief threatened to make trouble, and he led many expeditions into outer Mongolia, and even into territory now part of Siberia. During his reign there was no question of any nomad invasion of China. On the contrary, the Chinese military supremacy remained unchallenged. In this connection it is interesting to note that the Ming Empire narrowly escaped a danger which would have put the military ability of Yung Lo to a high test Tamerlane, the great Central Asiatic conqueror, who had overrun Persia and taken the Ottoman Sultan a prisoner, set out to invade China in the year 1404 No state or city had yet successfully withstood this terrible conqueror. His armies were the terror of western Asia, and their reputation long survived even in Europe What would have happened if the armies of Yung Lo had met the mighty Tamerlane,

> "Threatening the world with high astounding terms and scourging kingdoms with his conquering sword"

must remain an unanswered problem, for Tamerlane died when already on the march. The event is not mentioned by the Chinese, who perhaps remained blissfully ignorant of the menace which had come so close to them.

*The Prince of Yen reigned as third Emperor of the Ming, it was he who built the present city of Peking, and the Forbidden City palace His tomb is the principal of the Ming Tombs near Peking. His dynastic title was Ch'ang Tsu, and the reign title Yung Lo

The government of the Ming dynasty continued to be modelled upon the T'ang pattern after the move to Peking, but in some respects it cannot be said to have come up to that standard It was characteristic of the Ming period that men turned back to the T'ang rather than to the last great Chinese dynasty, the Sung The Sung had been pacific, and their unwarlike policy had paved the way for nomad conquests. The T'ang, on the other hand, had been a great conquering dynasty, exercising authority far beyond the limits of China itself. The early Ming Emperors, warriors themselves, felt little sympathy for the cultivated pacifists who had ruled the Sung Empire, and had been content to leave integral parts of China in alien hands Unfortunately, the Ming rulers discarded not only the pacifism of the Sung, but also the civilised restraint which had marked the internal administration of that dynasty.

Mongol methods had left a more barbaric standard of war and politics as a legacy. Under the Ming the treatment of rebels, conspirators, and enemy peoples, was more severe, a return to the ruthless methods of an earlier age. Sung pacifism had been discredited by the nomad invasions, and Sung humanity was equally forgotten Nevertheless, the fact that the Ming administration was often needlessly harsh, and the government consciously modelled on ancient lines, does not justify the charge of reaction and stagnation, which has sometimes been laid against it

It is certain that under this dynasty the Chinese civilisation for the first time began to lag behind the progress made in other countries, particularly in Europe, but this was more on account of the rapid progress in the west than because the Ming period in China was static. When Marco Polo returned from China, a few years after the extinction of the Sung dynasty, the civilisation which he made known to Europe was far superior in every respect to that of his native land When the Ming dynasty fell in A.D. 1644, Europe had made immense advances, especially in navigation, science, and knowledge of the other parts of the world China, on the other hand, had remained self-contained, and rather more isolated than it had been in the T'ang period In spite of this the two civilisations were still at the same stage of

development, and in China the Ming had made valuable contributions to the national culture.

Partly because these expressions of the Ming genius were not obvious to foreign investigators, and partly because the dominant Confucianism itself ignored popular art and literature, the Ming period has had to wait for recognition In the well-cultivated fields of poetry, philosophy and painting, arts at which preceding dynasties had excelled, the Ming were mainly imitative These traditional arts had become standardised and formalised, but since they were the recognised and orthodox artistic and intellectual activities, they alone met with the approbation of scholars The real Ming genius appeared in the unorthodox arts such as the drama, and particularly in the creation of an entirely new literary form, the prose novel. In art the Ming developed ceramics and originated a noble school of architecture Chinese culture did indeed become static, as compared with the rapid advance of the west, but only in the last two centuries of the Manchu dynasty.

In spite of frontier wars, in which the Emperor himself commanded in person, the reign of Yung Lo was a period of internal peace, marked by great activity in the rebuilding of city walls and fortifications. Throughout north China the immense and solid walls of the early Ming period are a feature of every city, even those of small administrative importance. The Great Wall itself, at least in its eastern stretches, is really largely Ming work, for the pre-existing wall had fallen into disrepair during the long centuries of nomad rule, when naturally, this defence was neglected Yung Lo has also left the city and palaces of Peking as the most eloquent testimony of his power and the civilisation of his period Peking as it stands to-day is almost entirely the city he built, for the Mongol capital was so extensively altered and rebuilt that only a small part of the former walls and the Bell Tower remain in the present city.*

*The Ming city as built by Yung Lo is the misnamed Tartar City, called by the Chinese the North City The commercial quarter to the south, now often called the Chinese City, was really only a suburb which was later enclosed by a subsidiary wall The Forbidden City, apart from minor alterations and reconstructions, is the palace of the Ming Emperor, and was completed in A D 1422

The founder of Peking died in 1425, on the way back from his last expedition into Outer Mongolia. His son and successor, Hung Hsi, was already a sick man, and died the same year, after a reign of ten months. The throne then passed to Yung Lo's grandson, Hsüan Tê, who only reigned for eleven years Thus in less than twelve years after Yung Lo's death, the throne was occupied by his great-grandson, a boy of eight, the Emperor Chêng T'ung. The accident of these rapid changes of ruler was a great misfortune for the Ming dynasty and for China. Frequent short reigns are always a source of weakness in an autocratic government, since they prevent continuity of policy, but this disadvantage is greatly enhanced when the government is a regency acting for a child Emperor Under Chêng T'ung, the regency was exercised by the Empress Dowager, and before long the misfortune of eunuch influence made its appearance

Cheng T'ung was brought up in the palace surrounded by the exclusive and elaborate etiquette which isolated the Emperor from ordinary human contacts Inevitably he fell under the influence of his only intimate companions and servants, the eunuchs. When the Emperor came of age, in 1443, he gave his entire confidence to one of these favourites, Wang Chin, whose authority became almost unlimited. Seven years later (1450) the eunuch, wishing to do honour to his family and display his power in his native country, persuaded the Emperor to lead an expedition to the border lands of Mongolia, where a Mongol chief had been raiding, and to pass by the city of Huai Lai, which was Wang Chin's native place, where he intended to entertain the Emperor in his own home

Cheng T'ung not only consented to undertake this wholly unnecessary expedition, but also made Wang Chin commander-in-chief of the army. The eunuch had no experience whatever of war or the command of troops, and his promotion was in the highest degree offensive to the old and experienced generals who had fought under Yung Lo. The campaign was grossly mismanaged and bungled from the first. Ignoring the advice of the regular officers who had long experience of the frontier, Wang Chin exposed the army to attack in a situation where it had neither water nor provisions. Finally, refusing to renounce his

plan of entertaining the Emperor in his native village, he postponed the retreat for this purpose, and the entire Chinese army was surrounded and cut to pieces near Huai Lai, a city about 50 miles north-west of Peking, beyond the Nan K'ou Pass in the inner Great Wall

The disaster of Huai Lai was the end of Ming superiority over the Mongol tribes. Chêng T'ung himself was taken prisoner, the eunuch Wang Chin, and all the experienced generals in the Emperor's service, slain. The Emperor himself at least displayed a suitable courage in this desperate situation The Mongol chief found him seated, perfectly serene, and with no trace of emotion on his face, on a carpet, in the midst of his slaughtered bodyguards. He was carried away to Mongolia a prisoner, but well treated, and later released. Indeed, the nomad victory was a chance success against an army which had been led by folly into disaster The Mongols were not strong enough to take full advantage of their victory. Although they raided down to the gates of Peking, they were quickly driven back when Chinese reinforcements arrived from the neighbouring provinces. Some years later, finding that another prince had taken possession of the throne, the Mongols released Chêng T'ung, who had ceased to be a valuable hostage The captive Emperor, indeed, enjoyed a fortune which he did not deserve, for when the Emperor Ching Ti, who had taken his place, fell ill, Chêng T'ung was restored to the throne by a cabal of ministers and generals. He seems to have had a winning personality, for he made lasting and intimate friends among his Mongol captors. His second reign, under the style T'ien Shun, lasted until his death in 1465.*

Although the immediate consequences of the disaster at Huai Lai were less calamitous than might have been anticipated, the event was a landmark in the Ming period. The era of Chinese military supremacy had ended, and henceforth the empire was on the defensive on the northern frontier, a defensive which

*The unfortunate Ching Ti, Chêng T'ung's younger brother, who was forced to take the throne during his elder's captivity, was shabbily treated after his death Deposed, when already dying, he was refused burial as an Emperor, and is interred in an isolated tomb, situated behind the Jade Fountain Park, some miles west of Peking, in a spot remote from the tombs of the other Ming Emperors.

increasingly failed to withstand the nomad onslaughts During the last third of the 15th century, the reigns of Ch'êng Hua and Hung Chih, the empire was tranquil, and still strong enough to guard the frontiers effectively, but early in the 16th century it became clear that the Court at Peking was losing prestige and authority.

It was under the Emperor Chêng Tê (A.D. 1505-1520), who succeeded at the age of 15, that the eunuchs, whose influence had been checked by the defeat at Huai Lai, obtained inordinate power As in the Han dynasty, the consequence of eunuch control was unrest and revolt in the provinces. The eunuchs were for the most part northerners, and as such had neither sympathy nor consideration for the southern provinces, which, remote from the Court, could not make their grievances easily known. Once the eunuchs had acquired control of the government they employed their power, like their predecessors in the Han period, thirteen centuries before, entirely for the pursuit of wealth. Offices were sold to the highest bidder, and could only be retained by paying the eunuchs a yearly tribute. In consequence the officials were forced to levy excessive taxation and exploit the provincials in order to satisfy the rapacity of the eunuchs The provinces which were furthest from the Court suffered the most under this system.

The Emperor Chêng Tê, an eccentric youth who delighted in going about in disguise, and was not easily persuaded to fulfil the imperial functions in a dignified manner, was not an incapable or lethargic ruler. Had it been possible for him to realise what were the effects of eunuch corruption he might have checked the evil. As it was, cut off from other sources of information, he suspected those who accused the eunuchs of malversations to be intriguers themselves. Nevertheless, when the proofs were convincing enough, he was willing to act. The fall of the eunuch Liu Chin in 1510 revealed the extent of the corruption which was undermining the empire.

The property of this man was seized by the state and confiscated for the benefit of the treasury. Expressed in terms of the current unit, a tael, or ounce of silver, Liu Chin was found possessed of gold and silver, coined and unminted to the value of

251,583,600 taels. He also had 24 lbs of unmounted precious stones, two suits of armour in solid gold, 500 gold plates, 3,000 gold rings and brooches, and 4,062 belts adorned with gems. This inventory did not include his mansion in Peking which was described as more magnificent than the Emperor's palace, which is no doubt an exaggeration. Liu Chin, like all eunuchs, came of a poor and obscure family. Consequently this vast wealth had been acquired during his service in the palace, and at the public expense

Two long reigns, those of Chia Ching, 1520-1566, and Wan Li, 1572-1620, gave a certain stability to the last century of the Ming dynasty, largely due to the capable ministers, Yang Ting-ho and Chang Ku-ching. Although the internal rebellions in the west which had troubled the country under Chêng Tê were suppressed, the empire was throughout this century harassed on its frontiers and coasts by foreign enemies. Nomad raiders constantly harried the northern frontier, and even appeared before the walls of Peking (1550), and Japanese pirates made innumerable descents on the south-eastern coast, where they sacked cities and carried off hostages for ransom. These expeditions were a regular industry in which the leading Japanese nobles of southern Japan invested sums of money, and from which they drew large profits

Hostilities with Japan on a more regular footing broke out in Korea, which was invaded by the Shogun Hideyoshi in 1592 Korea appealed to China, as suzerain, and the Ming Court despatched an army to drive out the invaders A six years' war followed, in which the Chinese after some early progress were uniformly unsuccessful. The armies despatched to Korea were large and costly Reinforcements from the most distant provinces were poured into the peninsula, and the resources of the empire wasted in a struggle from which China derived no benefit whatever. When at last the death of Hideyoshi caused the Japanese to evacuate Korea, the Ming Court could congratulate itself upon a barren victory which had exhausted the strength of the empire, and left it an easy prey to rebels and enemies beyond the Great Wall.

In 1618 the Manchu tribes, organised under a leader who

became the founder of their power, established a kingdom in the modern province of Kirin, and in the same year began to invade the Chinese province of Liao Tung During the remaining years of the Ming dynasty this war with the Manchus was a perpetual source of weakness and expense, which distracted the attention of the Court from the more urgent menace of internal rebellion. It is improbable that the Manchus would have succeeded in conquering any large part of China if the Ming dynasty had not been destroyed by internal troubles, which, in turn, were largely a consequence of the remote situation of their capital

Although the Manchus had conquered the whole of Liao Tung, in south Manchuria, by 1629, their further progress was held up by the defences of the Great Wall The Ming dynasty fell as the result of an internal rebellion, the consequence of eunuch extortion and the resulting oppression of the provincials Li Tzŭ-ch'êng, a native of Shensi, became the leader of this movement, and, after some years of varying fortune, conquered Honan in 1640, and then sweeping rapidly over Shensi and Shansi, fell upon Peking from the north-west. In 1644 he appeared before the walls of the capital. The defence of the city, foolishly entrusted to eunuchs, was betrayed, and the last Ming Emperor, Ch'ung Chêng, committed suicide on Coal Hill in the grounds of his palace The pavilion which was the scene of this tragedy still stands.

The Manchu conquest of China did not occur till after the fall of Peking. The Chinese general, Wu San-kuei, who was guarding the frontier defences, refused to recognise the rebel Li Tzŭ-ch'êng as emperor, and invited the Manchus to assist him to recover Peking. Profiting by this opening the Manchus installed themselves in north China, while Wu San-kuei pursued the beaten rebels into the western provinces, from which they had come.

Chapter XXIV

THE BEGINNINGS OF EUROPEAN TRADE

EARLY in the Ming dynasty, under Yung Lo and his immediate successors, between A D. 1405–1433, the Chinese Court sponsored a number of powerful naval expeditions to the Indian Ocean and neighbouring seas. This sudden and unprecedented interest in navigation, discovery and sea power has many features which sharply distinguish it from the European ventures into the eastern seas which were to follow before the 15th century was over. The Chinese expeditions were large and powerful; more than 70,000 men were embarked in fleets of specially built great ships. They were commanded by a Court eunuch, the celebrated Cheng Ho, who was nonetheless undoubtedly an able and adventurous navigator, a resolute commander, skilful diplomat and influential courtier; a combination of qualities rarely matched. Cheng Ho was the main inspiration for these expeditions which lasted as long as he remained active, but ceased with his death.

The purpose of these expensive activities was neither trade nor conquest: the Chinese did indeed intervene in the political affairs of many of the kingdoms in the Indonesian islands, the Malay peninsula and in Ceylon, but this action was incidental to the main purpose which was to display the power of the Ming empire and win nominal suzerainty of China in these regions. Kings who acknowledged the overlordship of the Ming Emperor were helped against their rivals who refused such homage. The Chinese at no time seem to have established permanent bases under their own sovereignty; they were content to use the ports of friendly states.

On the later voyages, ranging ever further over the ocean, it would seem that this primary motive of diplomatic prestige was overlaid by a new and growing interest in discovery and navigation for its own sake, and for the curious and rare products of distant lands which the fleets brought back for the delectation of the Court. Cheng Ho sailed his fleet up the Persian Gulf and the Red Sea; cruised down the east coast of Africa, and brought back from that country a live giraffe, which was duly presented to the Emperor in Peking. Courtiers suggested to Yung Lo that this must

be indeed the Chi Lin, a fabulous beast which only appeared on earth during the reign of a perfect sage The Emperor told them not to be so silly. Southwards the Chinese fleets touched upon Timor, recording the name of that island, so close to the Australian mainland, in ideographs which only give the sound 'Timor' when pronounced in the dialect of Foochow (from whence the fleets sailed). This rendering of the name remains in use to-day, although almost every other place in the south seas is named in Chinese in accordance with the pronunciation used by Amoy dialect speakers, who predominate in the region.

The voyages of Cheng Ho, popular with the Court, were not so with the civil service. The old rivalry between Court eunuchs and bureaucrats was soon to distract the Ming dynasty, and the expense of these expeditions, the fact that they were controlled and commanded by Court eunuchs, not by civil servants, sustained a constant opposition which, after the death of Cheng Ho, prevailed. When a further expedition was planned the bureaucracy intervened effectively by "losing" the essential documents dealing with navigation and sailing directions. The expedition was abandoned, and no more were launched.

Only sixty-four years after the last great voyage of Cheng Ho in A.D. 1433 Vasco da Gama and his fellow countrymen who followed him entered the Indian Ocean to begin the era of European domination of the eastern seas. Had the Chinese sustained the work so well begun by Cheng Ho, established permanent bases, maintained their sea power and founded an overseas empire, it is at least possible that the course of history would have been profoundly different. But the Ming Court lost interest in the question· sea power fell into a complete decline; after half a century the Portuguese were able to gather up what China had let slip, and achieve the empire of the seas with resources far inferior to those at the disposal of Cheng Ho. China in later centuries was to pay dearly for missing this opportunity.*

The period of Chinese history covered by the three centuries of direct contact with Europe is naturally the best known to western readers, but the history of this intercourse has almost always been presented from an exclusively western point of view,

**China's Discovery of Africa*. J. J. Duyvendak London Probsthain, 1949

and the facts emphasised are not always those which really determined the course of events. It is customary to pass over the first century of Sino-European relations very briefly and concentrate attention on the difficulties which arose between the foreign traders and Chinese officials at Canton in the 18th and early 19th centuries, difficulties which culminated in the Opium War and the foundation of the concession and extraterritorial systems This is the more intelligible as in the problems of those centuries the foreign nations were, generally speaking, in the right, and the policy of the Manchu government unwise. The underlying causes of these problems, and the reason why the attitude of the Chinese authorities was stiff and hostile, are to be found in the history of the early contacts between Chinese and foreigners in the 16th and 17th centuries The behaviour of the Europeans at that time cannot be easily justified, consequently western historians have devoted little space to this period

The history of European trade with China by the sea route falls naturally into three main divisions The early part in the 16th and 17th centuries, when the trade was practically a Portuguese monopoly, broken only by the Dutch and English at the end of the 17th century, is the sole period which falls within the Ming dynasty The second epoch, of "company trade," when the East Indian Companies of all the seafaring nations competed vigorously for the trade at Canton, ended in 1840 when the Opium War opened a new era, which has only ended in our own time, that of the concessions and extraterritorial system, or more simply, that of capitalist imperialism It is with the first period, the 16th and 17th centuries, that this chapter will deal, for it was then that the attitude of the Chinese towards western foreigners took shape and the character of the relationship between westerners and the Chinese was defined.

In studying the history of the intercourse between the Chinese and other peoples one cannot fail to be struck by the great difference between the treatment accorded to the Arab and Persian merchants in the T'ang and Sung dynasties, and that meted out to the western peoples by the Ming and Manchu governments. In the earlier dynasties the empire was freely opened to foreigners, who traded and resided not only in the

ports, but in the principal cities of the interior, and particularly in the capital. Under the Ming and Manchu Emperors the Europeans were carefully restricted to one single city and its immediate environs, and were positively prohibited to travel or reside in any other part of the empire. This contrast must have an explanation, and it is only too plain from the records, both Chinese and European, that the unfavourable treatment received by the Europeans was the consequence of their own violent and barbarous behaviour.

When the first Portuguese navigators arrived in China they were accorded exactly the same liberties and welcome as the Arabs and Malays had long enjoyed It was the fault of the Portuguese themselves that they afterwards suffered under a vexatious system of restrictions. It was a great misfortune for Europeans in general that the Portuguese were the first to open up the sea route to the east. The Iberian nations had developed a peculiar outlook on questions of trade and exploration, which was the outcome of their age-old struggle against the Spanish Moors and the Barbary corsairs. Schooled in this atmosphere of religious hatred and constant warfare the Portuguese and Spaniards had learned to think of every non-Christian people as *ipso facto* enemies, and every pagan ship that sailed the seas as a legitimate prize. They had, as so often happens, adopted the vices of those against whom they had fought for so long. In religious matters the Iberian peoples imported an Islamic fervour alien to other parts of Christendom. Conversion or the sword became with them a Christian doctrine, which in the east and in America was ruthlessly enforced.

The Portuguese, bringing these Mediterranean traditions into the eastern oceans, applied them on the coasts of India and China —pagan lands—which to the navigators were to be treated in the manner familiar on the Barbary coast. Trade was only the weaker alternative to a plundering foray. When the enemy was weak or unprepared the Portuguese plundered his ships and cities, massacred the "heathen" and seized the harbours as bases When he was strong or ready for battle they traded—always ready to assume the more congenial rôle of marauders if opportunity presented itself.

These ideas were foreign to the Chinese of that date They had been accustomed for many centuries to the visits of Arab and other Asiatic traders. They were well aware that these nations had their own religions, which in their own countries were universal and almost obligatory. In China this had never been the case Foreigners might practise what faith they pleased, provided it was not one subversive of public order. The idea that because a man had a peculiar religion he was at liberty to plunder and massacre all those who held a different faith was unknown in China. On the other hand, it was axiomatic to the average Portuguese of the 16th century

The Portuguese cannot be blamed for acting in accordance with ideas which were the result of their own history and the common practice on the Mediterranean coasts in their time, but the Chinese, equally, cannot be blamed if they regarded the newcomers as a brand of pirate in every way similar to the Japanese corsairs who had troubled the coasts and shipping of the empire during the Ming period. They had adopted measures to deal with Japanese raiders, and these measures they not unnaturally applied to the Portuguese who behaved in a similar way

Perestrello, who had only one ship, offered no violence, and was well received—just as if he had been an Arab or a Malay. The next year, however, four Portuguese ships arrived commanded by Fernando d'Andrada with an ambassador from the Viceroy of Goa to the Chinese Court. The Portuguese were received on exactly the same traditional footing as other emissaries from far distant countries. Their embassy was sent up to Peking, where no doubt, its gifts would be received as "tribute," and presents accorded in return ; but while the embassy was yet in the capital the Court heard news which threw a different light upon the newcomers

The Chinese were informed—perhaps by Arabs or by Chinese who had visited the East Indies—that the Portuguese were accustomed to appear first as peaceful traders, but, when they had once gained a footing, to pillage and seize cities, overthrow the government, and establish their own authority. Such had been their procedure in India, on the Persian coast, and in the East Indian Islands (Map 15). These unfavourable reports were

MAP 15. *European Trade Stations in South East Asia*

speedily confirmed by news of the activities of Simon d'Andrada—brother of the commander—at Canton The Portuguese had committed acts of piracy in the Pearl River and their increasing violence and aggressive conduct led to open hostilities. The Viceroy of Canton, alarmed for his city, resorted to military measures, and drove the Portuguese ships out of the river by force. Nothing is known of the fate of the ambassadors in Peking, but it seems likely that they were treated as pirates.

The Chinese considered that they now had ample proof that the Portuguese were really pirates masquerading as peaceful merchants They were forbidden to touch at Chinese ports in the future When in 1522 Alphonso de Mello appeared off Canton he was promptly attacked by a Chinese naval force and defeated after a stiff action. One Portuguese ship was captured and the surviving members of the crew executed as pirates.

Nothing more is heard of the Portuguese in China until 1542, when, unable to re-appear at Canton, they came to Ningpo Here they were at first permitted to trade, partly perhaps because their behaviour twenty years before had been forgotten, and partly because the Ningpo officials, exercising the wide power of local autonomy common in the provinces of China, considered that a prohibition at Canton in Kuangtung province did not necessarily apply to Ningpo in Chekiang

They were not long in discovering that the Portuguese were no more to be trusted in Ningpo than in Canton. The Ningpo establishment prospered mightily for two years. It is stated that some 3,000 Portuguese were resident in the city and a great volume of trade was transacted No sooner did the Portuguese find themselves numerous and powerful than they began to put their usual plan into practice Assaults and murders of Chinese in and around the city became common. Then the Portuguese, perhaps alarmed at the hostility which their arrogant behaviour was arousing, began to construct a fort. This open exhibition of their designs roused the Chinese officials, who had hitherto condoned the Portuguese aggressions for the sake of the large personal profits they made from the trade. They raised the populace, brought in troops, attacked the Portuguese fort and exterminated all who could not escape to the ships. The establishment at Ningpo came to an abrupt and violent end.

The experience of Ningpo was repeated in 1549 at Ch'üan Chou, in Fukien, a city which under the name of Zaytun, is mentioned in many Arab works as one of the principal centres of foreign trade in the Sung period. Here too, the Portuguese, at first received on the same footing as the long established Arabs, soon proved intolerably aggressive, and were expelled by force. It was at this time that the westerners earned the nickname of *yang kuei tzŭ*, "Ocean Devils," which has continued in popular usage to the present day. Foreigners who find it offensive should remember its origin.

The treatment which the Portuguese received at Ch'üan Chou is significant, for this city, an ancient trading centre, was well accustomed to the visits of foreign merchants. If the people of Ch'uan Chou found it necessary to drive out the Portuguese, when

for centuries they had welcomed the Arabs and Malays, it was certainly due to the conduct of the Portuguese themselves There is, in fact, no doubt about the matter for the accounts of the Portuguese behaviour and the reasons for their expulsion are given not by Chinese, but by contemporary European writers *

In spite of these bad beginnings the Chinese were anxious to trade with the westerners, if trade could be conducted on reasonable terms, without violence and treachery. The profits obtained by both sides were great, and the officials took a large share of them. In 1557 a compromise was reached, the Portuguese were allowed to trade at Macao, a peninsula in the Canton estuary, sufficiently remote from any city of importance to make serious aggressions difficult The peninsula was, however, walled off on the landward side, and the fortification carefully guarded by a strong Chinese force Moreover, the Portuguese were subject to a number of restrictions and prohibitions which their early violence at Ningpo and elsewhere made quite justifiable.

The Portuguese pioneers had given the European nations a bad name in China, and it was very many years before the Chinese thought of them as anything but a piratical and barbarous people who could not safely be permitted to live in the civilised celestial empire It may seem absurd that representatives of the nations of 16th century Europe should be treated as barbarians, but it must be remembered that the Chinese had had little or no opportunity of discovering that these buccaneers were the compatriots and co-religionists of the cultured peoples of Italy and western Europe. Unfortunately, the kind of man who was prepared to go adventuring to the farthest confines of the earth in a small and scarcely seaworthy vessel was not the type who could give the Chinese a fair idea of European civilisation. The missionaries, who did represent the culture as well as the religion of Europe, did not appear in China until the marauding trader-pirates had already created an indelible evil impression

St Francis Xavier was the first Catholic missionary to China, but he never set foot in the empire itself After spending many years in the East Indies and in Japan, he died on a small island

*The Chinese and Portuguese sources are collected and compared by T'ien-Tse Chang *Sino-Portuguese Trade*, Leyden, 1934.

near Macao in 1552. It was not until 1575 that Catholic missionaries reached Canton, in the same year that the Chinese, having now taken the measure of Portuguese power, permitted the merchants of Macao to come up to Canton on certain fixed days for trade At the very end of the century, in 1598, Father Ricci was permitted to travel to Peking and present his doctrine to the Throne In 1601, after a delay of two years, his gifts were offered to the Emperor, and the incident is thus recorded by the Chinese historians·

> "In the second month [of 1601] the eunuch Ma Tang of T'ien Ts'in brought to the Court Li Ma-tou,* a man from the western ocean, who had some rare gifts for the Emperor. The Emperor sent the eunuch's memorial to the Board of Rites who replied:
>
> " 'The western ocean countries have had no relations with us, and do not accept our laws The images and paintings of the Lord of Heaven and of a virgin which Li Ma-tou offers as tribute are not of great value He offers a purse in which he says there are the bones of immortals, as if the immortals, when they ascend to heaven did not take their bones with them. On a similar occasion Han Yu† said that one should not allow such novelties to be introduced into the palace for fear of bringing misfortune We advise, therefore, that his presents should not be received, and he should not be permitted to remain in the capital. He should be sent back to his own country '
>
> "In spite of this decision, the Emperor received the presents and permitted Li Ma-tou to live at the capital "

This entry is typical and illuminating. The Confucian Board of Rites took up a strictly traditional opposition to all foreign novelties, while the Court tolerated the foreigner in just the same way as the T'ang Emperors had tolerated the foreign religious wanderers of the 8th and 9th centuries. No doubt Father Ricci, with his relics and images of the saints, seemed to the Chinese

*The Chinese rendering of Mathew Ricci

†The great T'ang scholar and anti-Buddhist The occasion referred to is no doubt the offering of a reputed finger of Buddha to the Emperor mentioned in Chapter XVI

indistinguishable from the innumerable very similarly equipped Buddhist monks who had from time to time sought Court protection for their particular deities. Ricci remained in Peking, where he died in 1610.

While the Catholic missionaries headed by Ricci were rather tardily endeavouring to present a more favourable aspect of European culture to the Chinese, their Catholic co-religionists the Portuguese were finding their monopoly of the eastern trade menaced by Protestant competitors, who brought all the hatreds of the wars of religion to stimulate a commercial rivalry which was in any case sufficiently acute. In 1596 Sir Robert Dudley was despatched by the English Court to endeavour to open up the eastern trade. Nothing was ever heard of this expedition after it sailed, and so it must be presumed to have met with shipwreck somewhere on the way to China. The disappearance of Dudley checked English enterprise for the time being, and it was the Dutch who first challenged the Portuguese in the China seas.

In 1622 they attacked Macao, but were beaten off by the Portuguese, and established themselves in Formosa, which was not then a part of the Ming Empire. There they built themselves a fort, called Zelandia, as a base. Already some years previously the Dutch had become known to the Chinese in a manner very reminiscent of the first appearance of the Portuguese In 1607:

> "In the eleventh month Hsu Hsiu-tsu, viceroy of Fukien, reported to the Court that the 'Hung Mao' ['redheads,' Dutch, later also English] had slain some Chinese merchants and pillaged their vessels, and that thereafter they had landed as if they proposed to establish themselves on the mainland "

The historians do not relate what became of these "Redheads," but, as no more is said, it would seem that after plundering their fill they once more put to sea. At least it is fairly clear that the Dutch, on arriving in the China seas, adopted the same standard of piracy that the Portuguese had set up a century before. The short note in the Chinese history is the first mention of northern Europeans in China; an unfortunate introduction.*

*The existence of red hair was a source of popular prejudice in itself. The Chinese are uniformly black haired, and had been accustomed to depict the demons of the Buddhist Hell with red, or blue hair; hence "foreign devils "

The Portuguese had very little difficulty in persuading the Chinese that these newcomers, whether Dutch or English, were not suitable people to be allowed to trade in Chinese ports. Naturally, after their experience with the Portuguese themselves, the Chinese were suspicious of all western ships, and, when the first thing the Dutch did was to plunder the coast, their suspicions received a sufficient confirmation. The English, when they arrived, behaved in the same way In 1637 John Weddel arrived at Canton with three ships. The story of d'Andrada was now repeated The English, unable to communicate with the Chinese except through Portuguese interpreters, completely misunderstood the cautious attitude adopted by the Chinese, who for their part were no doubt warned by the Portuguese to beware of the English. The merchants of Macao wanted no Protestant competitors for the Chinese trade.

Weddel found the restrictions and delays to which he was subjected irritating and inexplicable He probably realised nothing of the background in the minds of the Chinese officials, who may very likely have believed him to be a compatriot of the "Redheads," who had pillaged in Fukien a few years before. When, losing patience, the English captain sent his boats to take soundings with the intention of moving his ships up to the city, the Chinese promptly opened fire on the boats.

Hostilities followed. Weddel bombarded a fort, landed and captured it Whereupon he:

> "Tooke downe the China Flagge, hung it over the wall, and thereon advanced our King's coullours"*

There was more fighting, but Weddel had allowed some of his companions to go up to Canton to negotiate; fearing for the lives of these hostages, he was forced to agree upon a composition. The Chinese, willing, as is their practice, to negotiate with a leader of bandits if such conduct offers the best chance of being rid of the nuisance, released the hostages on condition that Weddel left Chinese waters at once and never returned. These terms were agreed upon. Here was a typical instance of the mistrust and mutual suspicion

*H. B. Morse. *The East India Company Trading to China.* Oxford· 1926. Vol. I. p. 19.

which had arisen between the Chinese and western seamen as a result of the Portuguese aggressions in the early years. The only result of Weddel's voyage was that the English were placed in the same category as the Dutch—untamed barbarians who could not safely be allowed near the coasts of China

Weddel's conduct at Canton was not the only reason that the Chinese had to fear that the English were no more to be trusted than the Dutch or the Portuguese. Reports which reached China told of the piracies which all the western nations constantly practised upon Chinese shipping in the South China Sea These reports were indeed true enough for they are also given in the English accounts of early trading ventures to the Far East. In 1619—several years before Weddel came to Canton—the English and Dutch combined to plunder the Chinese merchant junks trading to the Philippines. At the same time it was reported that the Dutch had plundered and massacred all the junks and their crews going to Bantam in the East Indies The trade with Java was almost entirely stopped by Dutch piracies and massacres. Throughout the Eastern seas all nations had adopted the old Portuguese practice of treating every pagan ship as a legitimate prize.

When it is realised that these junks came from the very ports where the European pirates were fain to appear in the guise of peaceful traders, the cold reception they received from the Chinese authorities is most intelligible. Moreover, these conditions continued for many years after the trade at Canton had been regulated and was open to all nations In the 18th century the Dutch perpetrated a large-scale massacre of Chinese in Java, and the Spanish exterminated the much larger Chinese colony in the Philippines in cold blood It seems that the Chinese would not accept Catholicism.

There is no doubt that had the European trade not been highly profitable to the Chinese officials of Canton, all access would have been forbidden, as it was to Japan, and, for the same reason. It is indeed, very likely that had the Ming dynasty continued to reign the Court would have prohibited dealings with such dangerous customers Shortly after the entry of the English and Dutch, however, the Ming dynasty was overthrown, and in its final struggle against the Manchus, the Ming Court was forced to seek assistance on all sides.

The coast region was the stronghold of the last Ming pretenders and partisans, and thus the Chinese were brought into closer contact with the foreigners. Already Catholic missionaries, divorced from the piracies of their seafaring compatriots, had created a favourable impression on the Court, and had even made numerous converts, some of whom were men of great influence and high position. Through the agency of these powerful protectors the missionaries were able to smooth away some of the misunderstandings which had arisen in the ports, and even afford the Chinese Court valuable assistance in the war against the Manchus.

In 1581 Michel Roger, a Jesuit, the first of his order, reached China, and his successors acquired a considerable influence at Court The Jesuits were ready to serve in other than purely missionary capacities, and their knowledge of mathematics, astronomy and artillery won them a position which had not been accorded to missionaries with fewer intellectual attainments. In 1613 Li Chi-tsao, President of the Board of Rites at Nanking, the Ming southern capital, introduced Jesuits into his department to correct errors in the astronomy and calendar. Li was himself a convert to Christianity. A few years later, an even more important convert and patron of the Jesuits, Hsu Kuang-chi,* a minister, used his Jesuit teachers not only in the mathematical bureau of the Board of Rites, but also as artillery instructors in the war against the Manchus and the rebels. It was through his influence that the Ming government turned to the Portuguese for assistance, and enlisted the first European force which ever served in China.

In 1630 Gonsalvo Texeira and 400 Portuguese were enlisted at Macao, at the expense of the Ming Court, and started to travel north across China to assist in thewar against the Manchus along the Great Wall Much was hoped of this force, which, though so small, was equipped with firearms and artillery of a quality far superior to any so far used in China. Although Texeira and some of his officers reached Peking, and were engaged as advisers in the defence of certain northern cities, the main force was halted at

*He came of a family resident near Shanghai, where he owned property which he later bestowed on the mission. This is the famous Ziccawei Observatory, the Greenwich of China. Ziccawei is a Shanghai dialect form of the mandarin Hsu Chia Wei, "farm of the Hsu family."

Nan Ch'ang, in Kiangsi province, through the opposition and intrigues of the Cantonese merchants and officials.

As was so often to be the case in the later relations between the foreigners and the Court, the interests of Peking and Canton were at variance. The Cantonese, having now come to a working arrangement with the Portuguese at Macao, were reaping huge profits from the concentrated trade which passed through their port, and through no other. They feared that if Texeira's army performed conspicuous service in the north, the Emperor would grant the Portuguese the privilege of trading in other places, and also in the interior of the empire. Canton's valuable monopoly would be broken

They therefore spared neither money nor persuasions to change the views of the Court, and when they had corrupted a sufficient number of important ministers, they obtained a decree halting the army at Nan Ch'ang. The Portuguese, after marching half across China, were then turned back, and disbanded at Macao after receiving good pay and a free excursion through south China, but never having fired a shot against the enemy. Texeira remained in the north, as an artillery expert, and was killed in the defence of an unidentified city a year later

After the fall of Peking (1644) the Ming pretenders who held the south coast turned again to the Portuguese for help. The fugitive Court was strongly influenced by missionaries and converts One of these Chiu Shê-ssŭ, was chief minister and grand general of the last Ming pretender in Kuangsi and Yunnan, and he used Portuguese gunners with some success Indeed, his superior artillery was the main cause of the prolonged, and for the time successful, resistance of the Ming army in the south-west The last Ming Empress in this fugitive Court was also a Christian, and her son, born in 1648, was baptised under the name of Constantine, traditional for royal converts The Christian heir of the Mings never lived to found a Christian Empire After his father's defeat and flight into Burma, the little Constantine fell into Manchu hands, and "died" in captivity.

The close association of the Catholic missionaries and Portuguese with the Ming pretenders was not calculated to win them the favour of the ultimate conquerors, the Manchus Unfortunately, the English had also approached the Chinese partisan

Chêng Chêng Kung, known to the foreigners as Coxinga,* who dominated the China Sea, and had expelled the Dutch from Formosa, where he reigned as King. Coxinga at times seized parts of the mainland coast of Fukien and Chekiang, and the English, from whom he was anxious to buy cannon and powder, were permitted to trade at the ports he held. When in 1683 his son surrendered to the Manchus, the English remained under the suspicion of the conquerors as having been allies of the rebels

The behaviour of the Dutch, after their expulsion from Formosa, was not such as to prejudice the new rulers of China in their favour. In 1661 a fleet of Dutch ships arrived off P'u To Shan, the famous Buddhist shrine and sanctuary in the Chusan Islands off the Chekiang coast. They landed, pillaged the temples, burnt and sacked the shrines, and maltreated the monks in barbarous fashion. Since P'u To Shan was a sacred island undefended by any garrison, and uninhabited except by monks, there can have been no possible excuse for these wanton aggressions. The Manchu government, when it had reduced the coast to obedience, therefore once more put into effect the prohibition of all foreign trade except at Canton, and, though attempts were made by English ships to call at Ningpo and Amoy, they found the attitude of the new rulers so obstructive that nothing could be done.

The Manchus had a further reason for treating the foreign trader with suspicion The Cantonese had been among the last to submit to Manchu rule, and it was here in the extreme south that the conquerors had met with the stiffest opposition They knew that the natives of south China detested their new rulers, and would seize any opportunity to rebel. Already the secret societies, born in Canton, were preparing the way for future revolts. Under these circumstances the Manchus feared that any free intercourse with foreigners would lead to the secret stimulation of these rebellious schemes. The Chinese rebels would perhaps offer the foreigners free trade in return for assistance against the enemy. It was a justifiable fear, for in fact, this was precisely the offer which the T'ai P'ing rebels made to the European nations in 1860.

*Coxinga is a corruption of Chêng's title "Kuo Hsing Yeh," "Lord of the Imperial Name," i e the Ming surname, which had been granted to him by the Ming pretender In the southern dialects *kuo* becomes *kuok* or *kok*.

Then, however, the foreigners had just exacted large concessions and wide privileges from the Manchu Court, and so, mistakenly, refused the Chinese offer, and assisted the imperial armies.

The suspicions and fears of the Manchus, and the ready violence of the early western traders combined to perpetuate the misunderstandings and enmities of the early years of Sino-foreign trade. The better understanding which had grown up through Catholic influence in the later Ming Court, and with the Chinese partisans in the south, was checked, and the history of trade at Canton in the 18th century was one of increasing friction leading to open hostilities in the next century.

An important factor in this growing friction was the change in the character of the trade. In the first three centuries of the China trade, the balance was wholly in China's favour. The foreign ships came to Canton with a "stock" of silver, and bought silk and tea for cash. Even in the 18th century the Company ships were unable to dispose of their English cloth except at a loss, and in very small quantities There was no demand for European manufactures in China. After the growth of the opium habit, this position changed The foreign traders found in opium, which came from India, a commodity which could be sold at a high profit in China. Thus the necessity for importing silver to pay for silk and tea decreased. The Chinese government was not pleased to discover that this change was depleting the hitherto enormous profits made on the foreign trade The economic motive was the spur which roused the Court to make the smoking and importation of opium illegal. This decree, which cut at the root of the foreign traders' profit, led directly to the outbreak of war.

One of the consequences of the Opium War (1840) was the opening of Shanghai to foreign trade, and the gradual growth of its importance to the detriment of Canton, Amoy and Ningpo, the older trading ports. These southern cities had grown rich on their long monopoly, which set the seal on the slow process of development which had completely transformed the economic map of China. By the Manchu period the south coast was already the richest region in the empire. It was only in the last century of Manchu rule that the Yangtze estuary, with its chief city, Shanghai, became the centre of trade and modern industry.

Chapter XXV

THE DRAMA AND THE NOVEL

(A) THE DRAMA

DRAMATIC art developed late in China. In the west some of the earliest and greatest literature has been written for the stage, and the drama ranks high among the arts. In China, on the contrary, plays were not considered to be literature at all, the theatre was a place for frivolous amusement, and the drama, instead of developing in early times, lagged far behind poetry, history, or philosophy. It was not until the 13th century A.D., in the Mongol Yuan dynasty, that the Chinese drama really began to take shape as a separate branch of the arts. Although so late in developing, and, in spite of the neglect and derision of the scholar class, the drama, like the novel, with which in China it is closely linked, attained a universal popularity, and became one of the most vital elements in the popular culture.

The rise of the drama properly belongs to the Yüan and early Ming period, the 13th and 14th centuries, but it had existed in rudimentary form for many centuries before this development occurred Under the republic Chinese scholars have done much to rescue the history of the theatre from the oblivion and neglect which was the portion of mere "popular" arts under the empire. It has been shown* that the art of the stage had its beginnings in the exorcist dances of the *wu*, the magicians, or medicine men, of the early Feudal Age. These performances, originally purely religious, came in time to serve as spectacles at banquets and festive occasions, when the assembled guests were more entertained than impressed by the dancers and the accompanying music

Unlike the religious dances performed at Greek temples the *wu* dancing did not develop into true drama. Indeed, there does not appear to be much direct connection between these performances and the stage plays which became so popular nearly two thousand years later An element of the older culture which

*The best modern work on the subject is in Chinese. *The History of the Drama under the Sung and Yuan Dynasties*, by the late Wang Kuo-wei.

made a more direct contribution to the theatre was the rite performed in honour of the deceased ancestor of a family or clan. It was customary for some member of the family, usually, if not always, a young boy, to impersonate the deceased and receive the sacrificial offerings on his behalf. The custom arose of celebrating the famous acts of the dead man at the same time, and short dramatic scenes were performed on these occasions.

At a later period, under the Han and subsequent dynasties down to the T'ang, military victories were celebrated by dances, accompanied by music and songs forming a kind of ballet, which may be regarded as the direct ancestor of the popular *wu* or military plays, in which such dancing fulfils a very important part In the early years of the T'ang dynasty these ballets were a favourite Court entertainment and some particulars of the most famous have been preserved in history

The P'o Chên, "Breaking the Battle Line," was a ballet written by a Court musician named Lu Ts'ai to commemorate the victories gained by Li Shih-min (the Emperor T'ai Tsung) over the various pretenders who disputed the throne at the fall of the Sui dynasty (A.D. 618). It was a dance, in which 128 boys performed wearing silver armour and carrying lances. The piece derived its name from a song which was said to have been the marching song of the T'ang army during the campaign against the pretenders It is certain that this ballet was in some respects a true drama for it was proposed to add scenes showing the fallen pretenders led captive to execution This addition was banned by the Emperor, who did not want to hurt the feelings of the numerous ministers and officers in his service who had formerly served under his enemies.

Other references show that in the first years of the T'ang dynasty Court theatricals were a popular and frequent entertainment. The Emperor T'ai Tsung's son, the Crown Prince, who was an eccentric character, used to take part in private theatricals in his own palace, and composed the play himself. The T'ang dynasty, so famous for other arts, was in fact the period in which dramatic art first began to emerge. The Emperor Ming Huang (A D. 712-756) is still honoured as the patron of actors, for he is credited with having set up the first dramatic school. This

establishment, known as the Pear Garden, from the place in the palace reserved for it, was really more a training centre for the singers and musicians destined for the Court entertainments. Ming Huang was himself a gifted musician and took a personal interest in the Pear Garden and its pupils To this day actors are known as "sons of the Pear Garden."

The T'ang drama, however, apart from the ballets of the *P'o Chên* type, was limited to short scenes in which only two actors performed at a time The characters were confined to a few stock parts, reminiscent of the pantaloon and punchinello of early Italian plays. Moreover, it was purely a Court art, an imperial pastime, not a popular amusement. Outside the palace it is probable that certain quasi religious dances and pantomimes were given at temples and religious fairs, but as yet there was no public drama. The Sung period saw a continuation of the Court drama, but very little development. The plays were short, and as under the T'ang only two actors performed in each play.

The Mongol conquest, carried out by massacre and destruction, was a set-back to civilisation in the Far East. It seems curious, therefore that the Mongol dynasty should be the age in which a new art began to flourish The fact has led to the suggestion that the Chinese drama, suddenly developing under this short dynasty, owed much to importations from foreign sources. The Mongols employed large numbers of foreigners from all parts of Asia, and even from Europe It does not seem impossible that some of these aliens should have introduced an art hitherto hardly known in China There is however, no evidence that this was the case, and the internal and indirect evidence from the Yüan plays themselves shows no trace of foreign influence

On the other hand the large number of T'ang grave figures representing dancers and actors, who are obviously foreigners, strongly suggests that the early drama of that age, four hundred years before the Mongol conquest, was potently influenced by contact with alien lands. It is possible that the Court drama which Ming Huang encouraged and patronised was directly inspired by west Asiatic models, for, as has been shown, the T'ang Court was cosmopolitan and not averse to foreign arts and fashions.

With only one exception, all the ninety or more known play-

wrights of the Yüan dynasty were Chinese. Only one was a Mongol, none were west Asiatics. The foreigners in Mongol service were for the most part (like Marco Polo) ignorant of the Chinese language, certainly of the written characters. They used Mongol as the language of government Consequently, their contacts with the native culture were slight, as is clearly shown by Marco Polo's references to Chinese religion and customs. The subjects of the Yüan plays are in all cases taken from Chinese life or history, none show any evidence of foreign customs or legends connected with western sources. Had the Chinese drama been inspired by some western model it is hardly possible that the earliest plays would not have borne clear evidence of their origin.

The Mongols and the foreigners they brought to China were clearly not responsible for the expansion of the Chinese drama. The Mongol conquest was nevertheless a contributory cause Under the rule of this foreign dynasty the Chinese scholars were relegated to subordinate positions, often not employed at all. The classical examinations for the civil service were discontinued, for this system would have put the administration entirely in Chinese hands. The educated Chinese were thus perforce freed from their pre-occupation with classical literature and the examinations based upon it, and the new rulers did not frown upon or forbid non-classical studies as had too often been the practice of native governments

Scholars began to turn to new forms of literature for distraction. The earliest novels developed from tales which were written down in the Mongol period, but the most important intellectual activity of the time was the writing of stage plays. This was the first of the new popular arts which arose under the three last dynasties, Mongol, Ming and Manchu. The destruction of the Sung dynasty meant far more than the dethronement of a Chinese imperial family and the substitution of an alien house. It ruined and dispersed the cultured Court society which had been the centre of Chinese civilisation under the T'ang and Sung, for the Court at K'ai Fêng had continued the tradition of Ch'ang An, reuniting the scholars and artists who had taken refuge in the southern provinces during the chaotic interlude of the Five Dynasties.

After the Sung there is a marked decline of all the arts which had flourished at Ch'ang An, K'ai Fêng and Hang Chou. Poetry, painting and philosophy, the culture which had been centred in the vast and splendid capitals of T'ang and Sung, which drew together all the talent as well as most of the wealth of the empire, decayed under the barbarian Mongols Perhaps for that very reason less sophisticated and more widespread arts prospered. The new rulers of the empire ignored the native culture, which was indeed far above their heads. The concentration of art and talent at the capital ceased, and the educated natives of China, deprived of imperial patronage put their talents at the service of a wider, less cultivated public. Art and literature were popularised, first on the stage, and then, thanks to the printing press, by means of the novel The Ming dynasty, though it restored a Chinese family to the throne, did not succeed in reversing the new tendency. The founder of that dynasty and his supporters were themselves men of very humble origin. Peasants, ex-bandits and soothsayers were found among the grandees of the new Court at Nanking The cultivated aristocracy of the Sung Court could not be re-created at once, and the arts at which they had excelled suffered from their disappearance.

Under the last three imperial dynasties (Mongol, Ming and Manchu) a line of cleavage appeared in the Chinese culture. The scholars of the Court, bred in the Confucian classics, perpetuated an ever more formalised literary tradition and an ever more imitative art, dimly reflecting the vanished glories of Ch'ang An and K'ai Fêng Fu Ignored by them, and therefore neglected by history, the vital artistic and literary impulses of this age found new forms of expression, the stage, the novel, and the potter's art The later dynasties are often regarded as a period of cultural and artistic decline, but this is only true of the "Court arts." The living culture of the Ming and Manchu period was popular, not scholastic.

Nevertheless the new arts, however flourishing, were not admitted to the same consideration as the old. The "One Hundred Plays of the Yuan Dynasty" are so well known to a Chinese audience that every spectator is familiar not only with the plot, but almost with every line that is said or sung. Yet almost nothing

is known of the authors of these famous plays As with the Ming novelists, the Yuan playwrights did not advertise their authorship, for drama was not "literature," and the writing of plays was not becoming to a scholar. The names of the Yüan dramatists are known, and of them Kuan Han-ching is considered to be the best, but it is vain to enquire what manner of men they were, or look for details of their lives Their plays are famous; they themselves are almost forgotten.

The new plays were no longer composed of short scenes like the old Court drama of the T'ang and Sung. There were usually four acts, but some pieces were even longer. A still more significant change occurred in the character of the language in which they were written. The ancient drama was a Court art, acted in a polished language akin to the classical *wên hua*, and the characters were limited in number and conventionalised. The Yuan plays were written and acted in an idiom hardly more classical than the speech of educated people, and more characters were introduced. The subjects of the plays were more varied, freely drawing upon historical material and the life of the people From a limited Court entertainment the drama swiftly developed into a truly national art becoming and remaining, the chief recreation of the common people of China.

The Yuan dramatists are divided into two schools, northern and southern, and unlike the two schools of painting, the terms are here used in their geographical sense. The northern was both the earliest and the most prolific. Centred at Peking, the new capital of the empire, it flourished from 1235 to 1280 and the dramatists who wrote for it were all natives of the three provinces of Shansi, Shantung and Hopei. The southern school, at Hang Chou, the former Sung capital, only became important after the northern was losing ground; it was chiefly active between 1280 and 1335.

Very little is known about either school, for the drama, although it is now regarded as the most important contribution made to culture under the Yüan dynasty, was consistently ignored by critics and historians, who lavished their labours on endless commentaries on the classical books. The fact that the stage made use of the spoken language, instead of the classical, which is

unintelligible if spoken,* was in itself sufficient to condemn the drama to an inferior rank in the minds of scholars. Literature must, by its very essence, be written in the classical language. This was the canon of criticism until the contemporary "renaissance movement" dethroned the Confucian classics a few years after the republicans had, in 1911, dethroned the Emperor.

The Chinese stage both suffered and profited by this neglect. It suffered in that plays were written by men of inferior education and taste or as pastimes by scholars whose serious work was devoted to classical commentaries. In consequence the plays reflect the limitations, or the negligence of their authors. No Shakespeare, Congreve or Sheridan wrote for the Chinese stage. On the other hand, though the plays were not great literature, the standard of acting became very high, and the art of the stage escaped the paralysing influence of antiquarian classicism. Up to the very end of the empire, and still to-day under the republic, the Chinese drama has remained vigorous and alive, showing no sign of the petrifaction which attacked the older arts. It has successfully resisted the influence of alien European dramatic traditions.

A native growth, the Chinese drama has naturally developed conventions very different from those of the western stage. The divisions of comedy and tragedy as such are unknown to the Chinese theatre. A Chinese play would be more properly described as an opera, for the script is in verse, the parts are sung, and the orchestra is as important as the actors. In the Yüan plays, which were usually divided into four acts, there were four principal characters, each having a singing part in a separate act, but never singing in the same act as another actor This convention was abandoned in the Ming period, when more characters were introduced, and the singing parts multiplied. The Ming plays were

*The classical language, perhaps the literary form of the spoken language of the Feudal Age (1000-200 B C), is so different from everyday speech that a scholar could not understand a passage spoken aloud, if he was unfamiliar with the text. The fact that in modern Chinese only a small number of vocables (less than 350) are in use, and that the original pronunciation of classical words is now forgotten (owing to the ideographic script which gives the sense but not the sound of a word), makes a classical text spoken aloud nothing but a string of homophones.

also much longer, abandoning the limitation to four acts which had been customary, though not invariable on the Yüan stage.

In the Yuan drama the four principal rôles, or character types, which were to be found in every play, were the *chêng shêng*, "elderly man," who played the parts of emperors, generals, and old retainers. The *wu shêng* is the military hero, the principal part in *wu* or military plays. These plays, in which very skilled acrobatic dancing is a prominent feature, need a highly trained athlete for the leading rôle, and as the actor must also have a good singing voice, a good *wu shêng* must be something of a prodigy. The *ching i* and *hua tan* are two types of heroine, the first a "leading lady," either a high-born maiden or a simple country girl, the second a courtesan or a slave girl, usually the focus of the intrigue. Other parts, such as the *hsiao shêng*, the "juvenile lead" of the western stage, are in China of less importance.

On the Chinese stage all female parts are taken by male actors, usually youths The female impersonators are the most skilled actors in the company and play their rôles with such perfection that it is almost impossible for a stranger to believe that they are in fact male actors. The custom, as on the Elizabethan stage, arose from reasons of propriety, but to-day, although women are no longer forbidden the stage, the female impersonators have achieved such perfect technique that the Chinese audience would deplore their disappearance as a catastrophic loss to the stage Apart from the skill of the acting in itself the audience derives the added pleasure of admiring the perfection of the illusion.

A very high standard of ability is required of Chinese actors, for they perform on a bare stage, without the assistance of any scenery at all. There is not even a curtain, and the stage, without proscenium arch, is open on three sides. Changes of scene, or the end of an act are marked only by a "flourish" from the orchestra. In contrast to the bare stage the costumes of the actors are elaborate, gorgeous and costly They are designed in accordance with recognised stage conventions, which assist the audience to follow the play Thus, a Chinese playgoer immediately recognises a general by the long sweeping pheasant feathers of his head-dress, while a young scholar always carries a fan. Most of the costumes worn on the stage are an elaboration of the actual styles

in fashion during the Ming dynasty It is only in plays that specifically deal with historical episodes of the Manchu period that later styles are worn. For all plays dealing with ancient times, whether Ming or pre-Ming, the Ming costume is used. Fig. 58, depicting a scene from one of the historical plays dealing with the Three Kingdoms Period, shows Chou Yü, a general of Wu, ordering one of his officers, Huang Kai, to be flogged, so that, thereafter deserting to the enemy, he may be received without suspicion and obtain their confidence in order to betray them Chu-ko Liang and other famous figures of the period are seated on either side

The absence of any scenery makes it necessary for the Chinese stage to employ many conventions, some of which are strange to western dramatic tradition The make-up worn by actors is very heavy, and is intended to convey an indication of the character he represents. A villain, treacherous general, or oppressive official (a common character on the stage) has his face painted a blank white. Generals and warriors have faces painted with a terrifying effect of heavy red and yellow, a custom which is said to have a historical basis, in that a Sung general adopted this fashion to disguise his naturally timid and unwarlike appearance Other conventions replace the absence of properties. An actor carrying a horse whip indicates that he is mounted When he lifts one leg he is dismounting A hill, or a city wall is indicated by a table, or a chair. Persons dressed in black are invisible, characters carrying a horse hair switch are supernatural beings. These numerous conventions, which are for the most part founded on some legend or old custom, are perfectly familiar to the audience, who take them for granted.

No Chinese play is without music Indeed, the orchestra plays an important part in the production In military plays the complicated and extremely rapid acrobatic dances, a highly conventionalised form of stage fighting, are regulated in exact accordance with the time given by the orchestra. Any mistake by the musicians might be disastrous, for the actors, whirling long spears and performing somersaults and astonishing leaps at very close quarters, would be thrown into confusion. The musical accompaniment in other plays is intended to symbolise and express

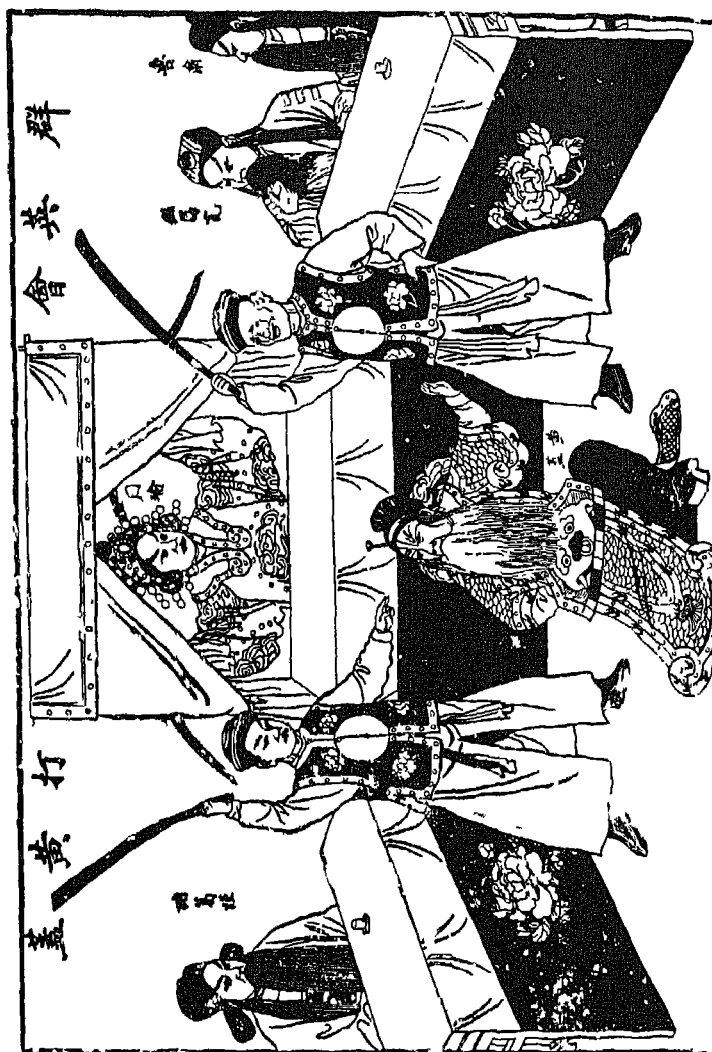



FIG. 58. *Actors in an historical play.*

the emotions which the actors are representing, violent and clamorous to portray anger or passion, soft for grief, or love

Chinese music, using a different scale from occidental, is not easily appreciated or understood by Europeans In the theatre two styles are in common use, the old Yuan and Ming Chinese music, called *kuan ch'u*, which is now being revived, and the *pan tzŭ*, a much more noisy and, in the opinion of the Chinese, vulgar, music, which came into popularity in the Manchu dynasty, especially under the Empress Dowager Tzŭ Hsi The *pan tzŭ* music, which is Mongolian in origin, was intended for open air performance, and, consequently, when played in a closed theatre, it is quite deafening.

One factor which has hitherto prevented the drama being regarded as an "art" on the same level as poetry or painting is the low social position of actors. As an inevitable consequence of the custom of having female rôles played by youths, actors in general had, and still have, a very poor moral reputation, perversion being openly recognised in theatrical society. The sons of actors were forbidden to sit for the examinations for the public service, and respectable families would not intermarry with stage folk

In many respects the Chinese theatre of the Yuan and Ming period resembled the early European stage There was in both an absence of scenery, a prohibition of female acting, an open three-sided stage, and a reliance upon gorgeous costumes to give colour and life to the production. In China the quality of the plays was not improved rapidly as time passed, the theatre remained broadly a popular entertainment, and was not encouraged by the collaboration of writers of genius Consequently no great progress in production or staging was made. The standard of acting became very high, but the quality of the plays remained second rate, and the production rather primitive. Quite recently there has been a change in these respects New plays, drawing upon the rich material to be found in some of the best known novels, have been produced and some attempt has been made to improve the production.

These changes can only be made gradually, for the theatre public in China is conservative, and slow to approve of novelties. Even now the orchestra is still accommodated on a corner of the

stage itself, unwilling to be banished to a less prominent position. This, indeed, is not the only obstruction to improved production which the Chinese actor or manager encounters The manners of the audience are very different from those to which the European actor is accustomed. No attempt is made to keep silence during the performance, vendors of sweetmeats, peanuts and melon seeds, cry their wares among the audience, and attendants distribute the steaming towels with which the Chinese playgoer is wont to refresh his face and hands. Since the audience already knows the play, and probably every line in it, this does not cause anyone much inconvenience.

One reason for this inattentive attitude is the length of the performance. Although individual plays are as a rule shorter than western pieces, several plays are put on in succession, and the ardent theatregoer who arrives at four or five in the afternoon need not leave till well after midnight. He would be ill-advised to do so for the best plays and the most celebrated actors only appear at the end of the programme, when the wealthy patrons, having dined leisurely, arrive at the theatre for the concluding plays in which their favourites will perform

(B) THE NOVEL

The appearance of the prose novel was the most important development in Chinese literature during the Ming period, a development of which the true significance only became apparent in modern times. The Ming novels were the first literature to be written in the *pai hua* or spoken language, the speech of daily use, as opposed to the *wên li* or classical style, which by the Ming period had already long been a dead language. The modern Chinese renaissance movement, which is the most important intellectual manifestation of the Chinese revolution, has adopted the living language of to-day as the medium for all literature, as an essential factor in the spread of education through the mass of the nation. This change would have been very difficult and perhaps far longer delayed if there had not already existed a literature in *pai hua*, which enjoyed an established popularity, particularly among the common people. This old *pai hua* literature consisted almost exclusively of novels, of which the most famous

—with one important exception—were written in the Ming dynasty.

Although the most celebrated works of fiction in Chinese were written centuries ago, it is only in recent times, since the Revolution, that this class of writing has been recognised as literature at all Under the empire the scholars of Confucian tradition frowned upon all fiction as frivolous, licentious, and subversive. Partly on account of the popular style in which novels were written, and partly by reason of their fictitious character, the official world of learning treated the new literary form with the greatest contempt It was shameful to admit a liking for novels. No scholar would confess to reading or writing such books except as a trifling amusement, much as an eminent modern statesman might read detective stories. It was the nadir of bad taste to quote a phrase from a novel or make any mention of this vulgar literature in a serious composition. Children, in many homes, were strictly forbidden to read novels, and many men now living can recall being soundly thrashed by parents or tutors when caught reading novels in their boyhood

In spite of this official contempt the novels of the Ming and Manchu periods were immensely and deservedly popular, were universally read by educated people, and not least by scholars themselves The petrified tradition of classical scholarship was unable to destroy or resist the charm and freshness of a new and vital form of literature In one respect, however, the official attitude to novels was truly detrimental Owing to the contempt and disregard meted out to fiction it is very rarely that anything is known of the authors of the most famous Chinese novels, for, though they were scholars and great artists, they usually wrote under a pseudonym, or even published their works anonymously. Under the empire, novels being regarded as outside the literary pale, no criticism or research could be devoted to them, and the writers of the republic found an almost virgin field before them, when at long last the novel was recognised for what it is, the most vital and original development in Chinese literature of the last 600 years.

The long neglect has now in great measure been repaired, and it is possible to trace the origin and growth of the novel as well as

its great influence upon the national culture. Although true novels, written in the living language, and running to some eighty or a hundred chapters, did not appear until the Ming period, there had been earlier fiction, both literary and popular, precursors of the real novels. Under the T'ang dynasty there existed a class of fiction known as Ch'uan Chi, or short stories, written by scholars in the most cultivated classical style, dealing mainly with legendary subjects or single episodes of a romantic or adventurous character. This literature was confined to polite society, and the tales were short, without a sustained plot, or characterisation Though Ch'uan Chi continued to be written under the Sung, they did not develop, and were often inferior to their T'ang models Another, ruder and more vital element was needed to give birth to the true novel.

The storyteller, seated at the street corner with his audience of children and idlers, is probably one of the oldest figures in the everyday life of an eastern country. In China he has no doubt exercised his calling for millennia. In the Sung dynasty it seems that the common people, either because they were naturally more frivolous than their ancestors, or perhaps because they were more prosperous and therefore had more time to spare for entertainment, developed a much keener appetite for stories and romantic tales. The storytellers of the Sung period multiplied and made a comfortable living. As the public appetite for its favourite tales was insatiable, the leading points of these stories were written down in everyday language as a professional "libretto" for storytellers who had not yet mastered all the intricacies of a long plot. These précis or guidebooks, were known as *hua pên*, "story roots," and were the real ancestors of the Ming novels

In the Yüan dynasty many of these *hua pên* were turned into plays, which added precision to their contents, and popularity to the stories themselves Early in the Ming dynasty scholars began to take the *hua pên* and incorporating the added material evolved in the theatre, re-wrote them in a semi-popular style, more literary than the *hua pên*, but far from the classical style of recognised literature. This was the genesis of the Ming novel.

From their first appearance, in the 15th century, the novels had an immense success. This was no doubt partly due to the ease

with which books in the living language could be read by people of little education, but the appeal of the novels went deeper than questions of style Hitherto all literature, history, and philosophy, had not only been buried in the difficulties of archaic language, but also was presented in coldly restrained terms which excluded all warmth and life. Chinese history might be meticulously accurate, but save in rare passages it was frigidly objective and, moreover, entirely ignored popular customs and common every-day life.

In the new novels the Chinese reader for the first time found a story which was not only easy to read, but also vivid with characteristic touches of real life, warm with passion, and salted with wit and humour Not only were the novels a new and lively presentation of the dry facts of history—for the early novels were all historical—but under cover of their semi-historical garb they directed telling criticisms against the government of the day and the corruptions of the official world. If this subversive character made them displeasing to authority, it greatly increased their popularity with the governed.

The qualities which made the novels popular with contemporaries are equally those which have made these books valuable to later generations. What history has too often left out, the novels supply. In them we can see something of the real life of the 15th century common people of China, hear them talk, and watch them at their daily work and recreations It is true that in the novel the characters are supposed to belong to long past ages, the 4th century A D., or the Sung dynasty, but in actual fact it is the manners and language of contemporary China that the authors described, life as they saw it and as their readers lived it.

In contrast to the wide, indeed, almost universal popularity of the most famous novels, next to nothing is known of their authors, and if some facts have been established, it is only by the exact and painstaking researches of the modern scholars of the republican period, who have completely reversed the old contemptuous attitude of the academic world towards the novels It would not be possible or desirable to expand this chapter into a treatise on the Chinese novel, or enter into the still vexed problems of authorship and origin A brief review of four of the most famous and

characteristic novels will be given, with an attempt to indicate the nature of the influence they have exerted on Chinese thought and culture.

Although Chinese novels have been classified into some seven or eight types, the broad division is between those which embroider and romanticise facts of recorded history, and works of pure imagination which deal with domestic life or love stories. The first type was the earliest, and the outstanding example, still the most popular book in the Chinese language, is the first novel ever written in China, the *San Kuo Chih Yen I*, or *Popular History of the Three Kingdoms*,* written by Lo Kuan-chung in the early years of the Ming dynasty Lo himself is also credited with other novels, but if these were really by him, they do not compare favourably with the *San Kuo* †

The *San Kuo* is a very long book, running to 120 chapters, and covering a period of nearly 100 years, from A D 168, when the massacre of the eunuchs heralded the downfall of the Han dynasty, to A.D 265, when the empire was reunited by the founder of the Tsin dynasty This troubled and confused period, known as the Three Kingdoms, from the division of the empire which followed the fall of the Han, was in reality an age of treachery, strife and misery (see Chapter XI); but Lo Kuan-chung has transmuted it into a romantic age of chivalry and noble deeds of arms, a colourful pageant which has successfully supplanted the real Three Kingdoms era in the imagination of the people of China.

The heroes of the book, Liu Pei, who founded the Shu Han dynasty in Szechuan, Kuan Chung, who is now the deified Kuan Ti, God of War, and Chang Fei, were, like the chief villain, Ts'ao Ts'ao (who was the father of the first Emperor of the Wei, the northern kingdom), all historical personages.

*Translated into English by C H. Brewitt-Taylor under the title *San Kuo, or Romance of the Three Kingdoms*. 2 Vols Shanghai. 1925. A complete translation which is never likely to be bettered.

†It was for long believed that Lo Kuan-chung lived and wrote in the Yüan dynasty. Prof Hu Shih has shown reason to believe that, though Lo was probably born when the Mongols were still on the throne of China, his book was written in the reign of the first Ming Emperor.

In fact, few of the characters, and none of any importance, are creations of Lo Kuan-chung While the chief characters and the main lines of the story follow authentic history, the author has enlivened the tale by introducing romantic and dramatic adventures which have no such foundation, and has arbitrarily divided his characters into sheep and goats Ts'ao Ts'ao, who was no more and no less an usurper than Liu Pei, is a double-dyed villain, the arch type of ruthless and unscrupulous schemer, while Liu Pei and his two friends, with their later colleague Chu-k'o Liang, are models of fidelity, courage and honour.

Early in the story a characteristic adventure puts the reader on his guard and stamps Ts'ao Ts'ao for the villain of the piece. Ts'ao Ts'ao is still an unknown adventurer and is in ill favour with the party in power at Court He is travelling in disguise through the country with a single chance companion, when he lodges for the night at the farm of an old friend and sworn blood brother of his father His host knows that Ts'ao Ts'ao is a wanted man, but receives the fugitives and goes into the inner part of the house to prepare a meal.

"When he came out, he said: 'There is no good wine in the house, I am going over to the village to get some for you ' And he hastily mounted a donkey and rode away.

"The two travellers sat for a long time Suddenly they heard at the back of the house the sound of a knife being sharpened. Ts'ao Ts'ao said. 'He is not my real uncle, I am beginning to doubt the meaning of his going off. Let us listen.' So they silently stepped out into the straw hut at the back Presently someone said:

" 'Bind before killing eh?'

" 'As I thought,' said Ts'ao Ts'ao. 'Now unless we strike first we shall be taken '

"Immediately they dashed in and slew the whole household, male and female; in all eight persons After this they searched the house; in the kitchen they found a pig bound ready to kill

" 'You have made a huge mistake,' said Ch'ên Kung, 'and we have slain honest folk.'

"They at once mounted their horses and rode away. Soon they met their host coming back and over the saddle in front

of him two vessels of wine. In his hands he carried fruit and vegetables

" 'Why are you going sirs?' he called to them.

" 'Accused people dare not linger,' said Ts'ao Ts'ao.

" 'But I have bidden them kill a pig. Why do you refuse my poor hospitality? I pray you ride back with me.'

"Ts'ao Ts'ao paid no heed. Urging his horse forward he suddenly drew his sword and rode after Lu [his would-be host]

"Lu turned and looked back, and at the same instant Ts'ao Ts'ao cut him down His companion was frightened "

He then upbraids Ts'ao Ts'ao for his treachery, and the argument terminates by Ts'ao Ts'ao's famous epigram:

" 'I would rather betray the whole world than let the world betray me."*

The San Kuo is thus an historical romance, "seven parts truth and three parts fiction," as one critic described it, but the author had also a serious purpose Throughout the long book, the "legitimate monarchy" party, which, in Lo Kuan-chung's opinion, was that of Liu Pei and his friends, is held up to admiration, while the "usurpers," such as Ts'ao Ts'ao, are painted as rogues. The opening phrase of the book, now almost a proverbial saying, sums up the theme of the story, and also aptly epitomises an abiding truth of Chinese history:

> "The empire when united, tends to disruption, and when partitioned, strives once more for unity "

Lo Kuan-chung had seen in his own lifetime a period not unlike that of the *San Kuo*, the confused anarchy of the last years of Mongol rule He had seen, too, a hero not unlike Liu Pei, who was born in poverty, bring order out of chaos and found the Ming dynasty. Writing in the first peaceful years of that dynasty, when the Emperor was powerful and the administration vigorous, it was natural that Lo exalted the government and reviled the rebels and bandits—even though the government and rebels he described were those of a long past age His book therefore represents the feelings of educated people in the early Ming

*C H Brewitt-Taylor, *op. cit.* pp. 41, 42.

period, relief at the ending of civil wars, and a firm belief in a strong centralised government.

Very different was the attitude of the second great Ming novel, the *Shui Hu*, a title which is not easily translated, but which means the "The Story of the Fringes of the Marsh."* This book in its earliest form was also attributed to Lo Kuan-chung, but it was re-shaped in the early 16th century by a certain "Shih Nai-an," a pseudonym, which conceals the identity of some scholar of that age † This is the edition, in seventy chapters, which is now generally accepted as the best of the many versions which have appeared at different periods. If the *San Kuo* can be compared to the Morte d'Arthur of Malory (with the difference that the personages in the Chinese novel had a real recorded historical existence) the *Shui Hu* is a saga similar to the cycle of Robin Hood tales, worked up into a novel centring round the personality of Sung Chiang, a bandit leader who lived in Shantung in the last years of the Sung dynasty, immediately before the Kin invasions (*circa* 1000).

Sung Chiang is an historical character, but, apart from a brief mention of his ravages in the provinces of Honan and Shantung, and his thirty-six companions, nothing else is known of his life, or his end. It is certain that long before the Ming dynasty a cycle of tales dealing with this band had been current among the people, and had found its way into stage plays during the Yuan dynasty. It was not until the Ming dynasty that the saga took shape as a novel. It is in many ways a more important book than the *San Kuo* and enjoys a popularity hardly second to the earlier novel. The *Shui Hu* is written in pure *pai hua*, that is to say in the actual everyday speech of the 15th century; and as the style of the *San Kuo* still retains many classicisms, the importance of the *Shui Hu* as evidence of the development of the language, and its influence on subsequent *pai hua* literature cannot be over-estimated.

*Recently translated into English by Pearl S. Buck, under the title, *All Men are Brothers*. 1933.

†Such is the opinion of Prof Hu Shih, who has devoted a long study to the problem of the authorship and development of the various versions of the Shui Hu, and printed his conclusions in a preface to the new edition published by the Ya Tung T'u Shu Kuan, at Shanghai 1923. It was formerly believed that Shih Nai-an was a scholar of the Yuan period, but this opinion is no longer tenable

The merits and interest of the *Shui Hu* are not, however, merely matters of style and language The story relates the adventures and exploits of the 108 companions of Sung Chiang, and the plot, unwinding from chapter to chapter, tells how each of these men came to "hide in the grass" (become an outlaw) and join the band on the mountain fastness of Liang Shan Po. Throughout the book it is the bandits who are the heroes; courageous, loyal, and honourable men, while the officials, ministers, and princes of the Sung dynasty are uniformly represented as vile oppressors, sordid scoundrels, and degenerate cowards.

The *Shui Hu* is thus a frankly revolutionary book, and it is not surprising that the government of the Ming, and later Manchu, dynasties, frowned upon it. One and all the bandit heroes are driven to outlawry by the gross injustice of the officials and the cupidity of the Court; they are honest men, with no thought of crime in their heads until they suffer unbearable wrongs. Then, indeed, once outlaws, they avenge their miseries upon the officials, over whom, and the cowardly soldiers of the government, they score easy triumphs. Professor Hu Shih has justly remarked that such a book could only have been produced, and won universal popularity, in an age when the government was bad and weak, for its pungent criticisms are really directed not against the "Sung" dynasty, which had long since disappeared, but against the actual Ming government of the later 15th and early 16th centuries

To the European reader, the *Shui Hu* has perhaps its tedious passages The frequent descriptions of single combats and ambuscades are rather unsophisticated In compensation there are innumerable pieces of lifelike description of everyday scenes on the great roads and in the wayside inns of the empire. The reader who knows interior China, even to-day, will find himself at home in the *Shui Hu*, and, when travelling in China, would hardly be surprised to meet Sung Chiang on some lonely mountain pass.

The characterisation of the 108 bandits and their enemies, the officials, as well as of a host of minor characters, is never conventional or stereotyped. Each and every man has his quality clearly defined, and his acts and speech are appropriate to him and to him alone Moreover, the *Shui Hu* affords a more intimate

picture of life than that given in the *San Kuo* In the earlier novel the personages are princes and generals of great power and authority, and theauthor kept closely to the historical facts known about them The author of the *Shui Hu*, on the other hand, had no such limitations. Sung Chiang, though historical, was a shadowy figure, and could be endowed with a character to suit the author's fancy His followers are men of the people, some gross country louts, others ex-soldiers, petty officials, or small landowners.

One of the bandits, Wu Sung, has become a Buddhist priest to escape detection, and is wandering through the country in this disguise. As he was formerly a military officer, Wu Sung finds the Buddhist rule forbidding a priest to eat meat or drink wine very irksome. At a wayside inn he has been refused meat, and served only with the regulation vegetable dish, although a guest who arrives later, obtains both meat and wine. Wu Sung watches him eating a hearty meal and cannot restrain his envy.

"Then he saw the keeper of the shop go again into the kitchen, and he saw the man bring out upon the palm of one hand a tray whereon were a pair of cooked chickens and a great plate of lean meat, and these he put before that fellow. On the table he placed other vegetables also, and he took a dipper and went several times to dip up wine and heated it. Now Wu the priest looked and he saw before him only this small saucer of vegetable food and, in spite of himself, he could not keep down his anger; although his eyes feasted his belly starved, and the heat of the wine came up in him, and he longed to break the table apart with one blow of his fist He shouted out in a mighty voice: 'Keeper, come here. How can you deceive a guest like this?' Then the keeper came in great haste and he asked: 'Master, do not make trouble here, if you want wine, then say so.' But Wu the priest stretched wide his two eyes and shouted out: 'You thing that knows no reason! Why should you not sell me this green flowered jar of wine and these fowls and the like? I would pay you with silver also.' The keeper of the shop replied: 'The green flowered jar of wine and the fowls and meat were all sent from the home of that young lord, and he

only sits in my shop and feasts on his own food.' Now, Wu the priest longed much in his heart to eat, and so how could he be willing to listen to this explanation? He bellowed forth: 'Pass your wind, pass your wind' [a vulgar expression for 'don't talk nonsense']. The keeper of the shop said 'I have never seen such a priest as you and so savage as this' Then Wu shouted out: 'And how is this lord savage, have I eaten your wares and paid you nothing?' The keeper of the shop muttered: 'I have never heard of a priest calling himself a lord'"

Wu Sung then knocks the shop-keeper down and the other guest intervenes in the quarrel:

"'You accursed old priest; how little do you fulfil your duty How is it that you put out your hand and foot to fight? Do you not know priests may not give way to anger?' Wu, the priest, answered: 'I did but beat him and what has that got to do with you?' That big fellow spoke in wrath and cried. 'I exhorted you out of good purpose and you accursed priest dare to come and offend me with your speech.' When Wu heard this he was very wroth and pushed over the table, came out and shouted. 'Of whom do you speak you thing?' That big fellow laughed and said 'Accursed priest that you are, you seek a quarrel with me—you are stirring the earth over the earth god's head, you thievish priest come out, and I will talk with you.'"*

The point of this passage is the very unpriestly conduct of Wu Sung, for anyone acquainted with China will recognise the normal behaviour of an undisciplined soldier in an inn.

Both the *San Kuo* and the *Shui Hu* enjoy an immense popularity with the Chinese people, and it is from these two books, and the many plays based upon them, that the common people have derived most of their ideas of past history. There is hardly any man in China who has not heard these stories, even if he cannot read them himself. In Szechuan, where much of the plot of the *San Kuo* is laid, it would be true to say that the characters of that

*Pearl S Buck. *op. cit.*

novel are more real to the people than their present rulers, and the events of 1500 years ago more vivid than recent history Ignored by the scholars, whose classical literature was far above the heads of the masses, the Ming novels created a popular literature which has had a far-reaching influence on the Chinese people in the last 500 years.

The popularity of the *Shui Hu* led to the publication of many "continuations," most of which are far from having the value of the original. One novel which grew out of the *Shui Hu* cycle marks an important advance, and is the first example of a new type of story. The *Chin P'ing Mei*, a title which, being a compound of the names of the three heroines, is quite untranslatable,* was written in the first years of the 17th century by an unknown scholar, though it is believed that it was the anonymous work of Wang Shih-chên, a celebrated writer of that period who lived between 1526-1593, and rose to be President of the Board of Punishments, or Minister of Justice

The book is an expansion of Chapters 23, 24 and 25 of the *Shui Hu*, which relate the story of how Wu Sung, one of the heroes of the *Shui Hu*, mentioned above, came to be a bandit In the original book, Wu Sung, a petty officer of the city guard, discovers that his sister-in-law has committed adultery with a rich man of the town, and poisoned her husband to escape detection. Through the assistance of a little boy, who sells pears on the streets, Wu Sung lays a trap for the lovers, and, having obtained convincing proof of the woman's crimes, wreaks a terrible vengeance upon her and her paramour After this, to escape the consequences of his act, he takes to the hills

The *Ching P'ing Mei* takes up the story at the point where Golden Lotus, the adulteress, makes the acquaintance of Hsi-mên Ch'ing, the rich young wastrel Following the original plot, it recounts the murder of Wu the Elder, Golden Lotus's husband, but when Wu Sung returns to the town and hears the truth, the story is changed. Golden Lotus has become the concubine of Hsi-mên Ch'ing, and Wu Sung fails in his first plan to exact

*There exists a partial translation of this work in French, under the title *Lotus d'or*, by G. Soulié A complete translation has been made into English by F C C Egerton (Routledge).

vengeance, and is exiled for the attempted murder of Hsi-mên Ch'ing Then the *Chin P'ing Mei* takes the story into the home of Hsi-mên Ch'ing, where Golden Lotus is now established as his concubine.

From this point the *Chin P'ing Mei* is entirely original, and develops into a story wholly unlike the historical romances which had preceded it. In those novels the few feminine characters are stiff and conventional figures, playing only a minor rôle. In the *Chin P'ing Mei* on the contrary, it is Golden Lotus, and her two rivals in the harem, the principal wife of Hsi-mên Ch'ing and another concubine, who are the chief characters. The story is one of domestic life in a middle-class family in some small provincial town Hsi-mên Ch'ing, though well to do, is a medicine merchant by profession, and scholarly ambitions and official life do not play any part in this novel.

The plot is concerned with the intrigues of the three women for the favour of their husband, their mutual jealousies, and the daily incidents of life in this class of society. It is only at the very end of the book, when Hsi-mên Ch'ing himself is dead, that the story returns to the original plot of the *Shui Hu*, and relates the return of Wu Sung from exile and the vengeance which he exacts on his brother's murderess Until recent times western writers who had noticed the book, loudly condemned the *Chin P'ing Mei* as a licentious, almost pornographic novel It is true that there are some passages which could not be rendered into a European language without incurring the charge of obscenity, but the undue emphasis paid to this aspect of the *Chin P'ing Mei*, especially by missionary writers, does an injustice to the real merits of the *Chin P'ing Mei* and its importance in the development of the Chinese novel If this book is indecent in parts, it is only because, telling a story of domestic life, it leaves out nothing. In those passages where 19th century writers were wont to pause and insert three stars, the *Chin P'ing Mei* proceeds with the narrative undismayed, nor is the erotic side of the book emphasised at the expense of the story as a whole. In the *Chin P'ing Mei* the plot is not twisted to present as many erotic scenes as possible, it merely presents a balanced, if exceedingly frank, picture of human relationships

As a step in the progress of the Chinese novel its significance

is great. For the first time feminine characters are given a rôle of equal importance to the men and drawn with skill and sympathy Moreover in place of the somewhat wearisome recurrence of combats and warlike exploits which occupy a large place in the *San Kuo* and *Shui Hu*, the *Chin P'ing Mei* is uniquely concerned with the peaceful and obscure lives of a middle-class family, and it is the clash of temperaments and characters which provides the material for the plot.

The *Chin P'ing Mei* had to wait many years for a rival in the new field of domestic stories. In the Ming dynasty several novels of this type were indeed produced, and they mark a certain advance in other respects, introducing characters of more refinement than are found in the *Chin P'ing Mei*, but on the other hand losing much of the truth and realism which characterised the earlier novel Such books as the *Yu Chiao Li* and the *Hao Ch'iu Chuan** have their good points, but the characterisation, particularly of the hero and heroine, is too conventional and formal to be convincing The young scholar, to whom no feat of arms or of poetic composition presents any difficulty, and who is invariably first on the list at the examinations, is in the end, after many vicissitudes and adventures, happily married to the radiant heroine, for whom, equally, no art or poetry has any difficulties. The chief merit of these stories is that when not dealing with the hero or heroine they do present a lively and agreeable picture of the intrigues and machinations of official life in and about the Court.

These stories may be said to have prepared the public taste for the greatest of all Chinese novels, which though not written in the Ming dynasty, sums up and surpasses the achievement of the preceding two centuries. The *Hung Lou Mêng*, usually rendered as *The Dream in the Red Chamber*, was written in the middle of the 18th century, and therefore belongs to the Manchu period, with which, in fact, it deals Like the *Chin P'ing Mei* it is entirely concerned with the affairs of one family, and among the chief characters women are prominent.

*The first has been translated into French under the title *Les Deux Cousines*, by S. Julien, and the second into English as *The Fortunate Union*, by J. F. Davis. 1829. This translation is incomplete.

For many years the authorship of this novel was a mystery, and even in modern times several theories have held the field, both as to the identity of the author and the purpose and "hidden meaning" of the book. It was widely believed to be a satire on the youth of some great personage, one of the most popular theories being that it was an unfriendly account of the boyhood of the Emperor K'ang Hsi. These theories, however attractive to lovers of scandal, must now be discarded. Professor Hu Shih has shown overwhelming proof of his conclusion that the first eighty chapters are the work of Ts'ao Hsueh-ch'in and the last forty that of Kao Ou. The first author, who may be regarded as the real designer of the book, was the impoverished scion of a great family, Chinese by race, but enrolled in one of the two Chinese Banners of the Manchu military organisation *

The Ts'ao family had enjoyed honours and wealth at the beginning of the Manchu dynasty, they had even entertained the Emperor K'ang Hsi himself when he was making a progress in Chekiang province By the time, however, that Ts'ao Hsueh-ch'in wrote his masterpiece, this wealth had been dissipated He himself lived almost in squalor in a back street of Peking, and his book was written in these circumstances to commemorate his own youth and the fallen fortunes of his family

The *Hung Lou Mêng* is autobiographical Precious Jade, the boy hero of the story, is, in fact, Ts'ao Hsueh-ch'in himself as he remembered his boyhood, or perhaps as he would like to have pictured himself, and the great family of Chia in which the story passes is the Ts'ao family on the eve of its decadence. The *Hung Lou Mêng* is in every way a unique book No Chinese novel can compare with it, either for the grace and refinement of the language—which is none the less *pai hua*, the spoken Mandarin of Peking—or for the subtle characterisation and artistic integrity of the plot It is true that these qualities are somewhat diminished in the concluding chapters, Kao Ou's continuation, which however, though not up to the level of the first part of

*The Eight Banners were instituted before the conquest of China. Six were reserved for the Manchus, and the two Chinese Banners were enrolled from those Chinese who submitted to, or voluntarily joined the Manchus before the fall of the Ming dynasty The Ts'ao family therefore belonged to this class

the book, are a meritorious piece of work, following, there is some reason to believe, the lines of the plot indicated by the original author.

The hero of the *Hung Lou Mêng* is Pao Yü, Precious Jade, the second son of a great official and hereditary duke, who is drawn as a correct but somewhat limited Confucian scholar, a true type of the high official class. Pao Yu, however, is anything but the model of filial piety and scholarly industry which a Chinese boy of that class and age was supposed to be. On the contrary, though handsome and intelligent in his own way, he is idle and indifferent to classical studies, at which he makes poor progress. He is also frequently in trouble for his rather precocious interest in frivolous entertainments and his preference for the company of his girl cousins, and indeed for female society in general. Pao Yu, in fact, has the artistic temperament, and a natural gift for poetry which is not exaggerated into a divine inspiration as in earlier novels.

The plot of the story, as developed in the first eighty chapters and continued by Kao Ou, is the love of Pao Yu for his cousin Lin Tai Yu (Black Jade), who, left an orphan in childhood, comes to live in the Chia family under the care of her grandmother, the old Lady Chia, benevolent but autocratic ruler of the household. The old lady is indeed one of the most successful and delightful creations in the book. She is the very type of the old ladies who rule Chinese households with an iron rod of convention, yet fondly indulge the weaknesses of their favourite grandchildren.

The girls, Black Jade, and another cousin, Pao Ch'ai, who also comes to live in the great mansion of the Chia family, are drawn with skill and real understanding. Though beautiful, elegant and well educated, they are no prodigies, and the tragedy of their fate—marriage to an unknown man, of a strange family, without their consent or foreknowledge—is feelingly revealed. In this respect the *Hung Lou Mêng* is epoch making. It is the first open revolt against the tyranny of the old marriage customs. The author is too much an artist to rail. He shows the parents of Pao Yü, and guardians of Black Jade as essentially human, well meaning, conventional people, anxious to arrange marriages

for their children which will secure the prosperity of the family, without sacrificing the happiness of the parties by some ill-assorted match. Black Jade is too delicate—she is threatened with consumption—and Pao Yü is married, against his will, to Pao Ch'ai, the other cousin Black Jade, believing herself deliberately forsaken by her lover, dies almost unattended on his wedding night.

The tragic element provided by the frustrated love of Pao Yü and Black Jade is only one aspect, and perhaps not the most important, of this book The real plot is the conflict of the artistic temperament, personified in the wayward and morally weak Pao Yü, and the stern, matter of fact world of reality and convention It is a remarkable fact that, considering the period in which it was written, a period when children were rarely seen and never heard, Ts'ao Hsueh-ch'in makes his hero a boy only twelve years old at the beginning of the story, and not yet adult at the end The heroines, Black Jade and Pao Ch'ai, are about the same age

Although the *Hung Lou Mêng* is partly autobiographical, recalling scenes and persons known to the author in his boyhood, the real aim of the book is a criticism of the rite-bound society of 18th century China and the Confucian philosophy which dominated it. It is subtle criticism, for the author never openly takes the side of art and liberty against convention and industry, but exposes his idea by implication, enlisting the reader's sympathy for Pao Yu, while apparently condemning his faults and misbehaviour. Ts'ao Hsueh-ch'in's outlook is more clearly expressed in the passages dealing with the Buddhist priests who make an occasional, but always highly significant, appearance in the story The sharp contrast between the worldly atmosphere of the great Chia mansion and these wandering mendicants, who have renounced all possessions and every human contact, is always in favour of the latter There is therefore good reason to suppose that the conclusion of the novel—in which Pao Yu abandons his family to enter the "gate of emptiness"—the Buddhist church—was really in accordance with the intention of the author.

The *Hung Lou Mêng* is considered to be a masterpiece of style, although the many passages of dialogue are written in the

colloquial speech of north China, and the phraseology is natural and appropriate to the speakers The following extract, from the twentieth chapter, is typical. Although they are still children, Black Jade is becoming jealous of Pao Ch'ai, and is secretly annoyed when Pao Yu pays any attention to the rival During the New Year holiday (a festive time corresponding in China to the western Christmas), Pao Yu has been visiting Pao Ch'ai in the apartments where she and her mother lodge in the great Chia mansion. They are called away to meet a visitor who has come to see the old Lady Chia, Pao Yü's grandmother and head of the whole household Black Jade is already there when they arrive, and guesses that Pao Yu has been with Pao Ch'ai·

"Just then Black Jade, who was standing close by, asked where Pao Yü had been Pao Yü himself replied. 'I have come from Pao Ch'ai's rooms.' Black Jade smiled coldly, and said: 'I should say so. When you are not actually tangled up there, then you have just flown away for a moment'

"Pao Yü said 'So I am only allowed to play with you, and amuse you when you are sad? If by chance I go over to her for once, then you talk like this'

"Black Jade said 'What utter nonsense. Why should I care whether you go or not?—and I never asked you to come and cheer me up when I was sad. After this please leave me alone.'

"So saying she swallowed her anger and went back to her own rooms

"Pao Yu hurried after her, pleading 'Dearest, angry again? It's just because I was rude; surely you will come back and join the fun with the others for a bit? Or are you yourself unhappy?'

"Black Jade replied: 'Are you giving me orders?'

"Pao Yü laughed, saying: 'Certainly I would never dare to give you orders; only you are trampling upon your own body.'

"Black Jade said: 'Trampling on my own body! If I kill myself what business is it of yours?'

"Pao Yü said: 'What's the use? In the First Month, even the dead live.'

"Black Jade retorted: 'I *shall* talk of death This time I really will die. If you fear death, how will you live to be a hundred?'

"Pao Yu said, laughing, 'If there is going to be nothing but quarrels like this, am I likely still to fear death? Stone dead would be far better.'

"Black Jade answered quickly' 'Just so. If this sort of quarrelling goes on, better be stone dead.'

"Pao Yu said: 'I spoke of my being stone dead; I did not mean anyone else' "

It will be seen that Tsao Hsueh-ch'in has skilfully portrayed the illogical and inconsequent character of an argument between two children.

Chapter XXVI

ARCHITECTURE

ARCHITECTURE in China is associated with the Ming period, not only because the art was greatly developed under that dynasty, but because very few existing buildings or monuments are of earlier date. The Ming Emperors were great builders, reconstructing and embellishing cities and temples, their work survives, while that of their predecessors, which was possibly just as magnificent, has disappeared

Unlike the ancient civilisations of the Near East, China has no architectural monuments of the remote past. The early Chinese built in wood and mud bricks, materials which have not survived the ravages of time With the exception of the tomb chambers buried in huge tumuli there are no surviving edifices of the Feudal Age, nor even of the Han dynasty The Great Wall, though built by the Ch'in Emperor, Shih Huang Ti, has so often been repaired that the existing structure owes its outward form to later builders Only shapeless earthen mounds mark the site of the T'ang palaces at Ch'ang An and Lo Yang. The earliest Buddhist foundations, such as the White Horse Monastery at Lo Yang and the Ta Yen monastery outside Ch'ang An, though still occupying the original sites, have frequently been rebuilt, and with the exception of a few pagodas of T'ang date, the existing structures are Ming work.

Any study of the history and development of Chinese architecture is therefore seriously hampered by a lack of materials. Fortunately, literary sources and archæological finds have in some measure filled the gap, particularly the discovery of Han clay model dwellings and bas-reliefs depicting buildings. These finds supply a clear idea of the design and style of Han domestic architecture, for the models were tomb furniture intended to supply the spirit of the deceased with a habitation in the next world similar in all respects to the one in which he had lived on earth. A simple form of spirit-house is represented by the green glazed model of Han date reproduced in Fig 59. The bas-reliefs show typical buildings of the day, with domestic scenes

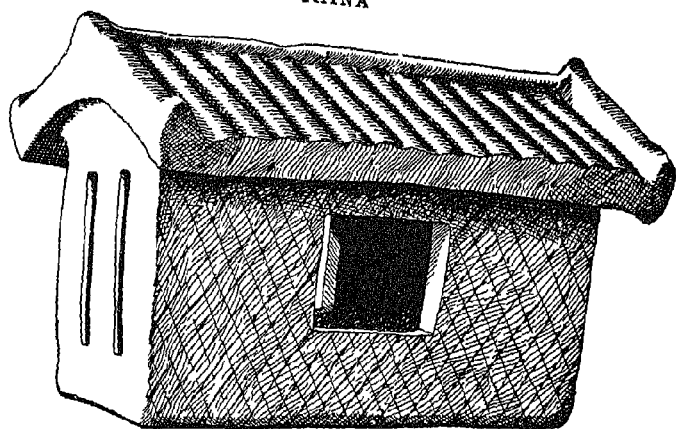



FIG. 59. *Han clay model of a house.*

in the kitchen, the women's apartments, and the banqueting hall.

The clay models prove that, with some minor exceptions, the Chinese domestic architecture of the Han period was almost identical with that of the present day, both in plan and style. The Han house, like its modern successor, was arranged in a series of courtyards flanked and faced by detached halls, which are sub-divided into smaller rooms. The high-pitched roof supported on columns and roofed with tiles is similar to that of the modern house, although the concave curve of the roof appears to be less marked in the models than in existing buildings Here, perhaps, there has been a change, but the evidence of clay models is not absolutely conclusive.

In minor features and details of ornamentation the clay model houses from Han tombs closely resemble existing styles. The main entrance is defended on the inside by a spirit screen, a wall built opposite the opening in such a way as to block out any view of the inside courtyard. The purpose of the spirit screen is to prevent evil spirits from entering the house. According to Chinese demonology, devils can only move in straight lines, therefore this device is a perfect safeguard against their intrusion into the house The Han models prove that this belief and the custom of building

spirit screens are at least as old as the first century of the Christian era.

This type of house has no doubt continued unchanged because it was perfectly adapted to the social conditions of Chinese life A Chinese home was intended to be the common dwelling-place of a very large family, and the several collateral branches of the family each inhabited a separate courtyard, a system which combined a necessary separation of possibly incompatible relations with the ruling ideal of unity under the paternal sway of the head of the family. Consequently all Chinese houses, small and great, were planned in the same way From the small country farm or humble town dwelling of the people, with only one courtyard, to the vast and spacious palaces well called "palace cities," the plan was always the same, the courtyard unit multiplied and enlarged until it reached imperial dimensions. A good example is afforded by the Confucian temple at Chu Fou, the birthplace of the Sage, of which a plan as popularly sold, is shown in Fig. 60.

Clay models and the bas-reliefs afford some idea of the plan and style of the better class of houses in Han times, but only a literary description remains to attest the magnificence of the imperial palaces of the early empire. The site of Ch'in Shih Huang Ti's palace at Hsien Yang in Shensi has been identified, but as yet no scientific excavation has been attempted. Ssŭ-ma Ch'ien gives a description of this palace in his history, which, though written a century after the fall of the Ch'in Empire and the destruction of Hsien Yang, no doubt embodies the traditional account of its glory.

> "Shih Huang, considering that the population of Hsien Yang, was large and that the palace of the kings his predecessors was small . . . began the construction of a palace for audiences, to the south of the Wei River in the midst of the Shang Lin Park. He first built the main hall. It measured from east to west [length], 500 paces, and from north to south 100 paces. Ten thousand men could find room in it and standards 50 feet high could be raised up There was a circular riding road on a raised way [round the courtyard]. From the front of the hall a road led in a straight line to the Nan Shan Mountain, and on

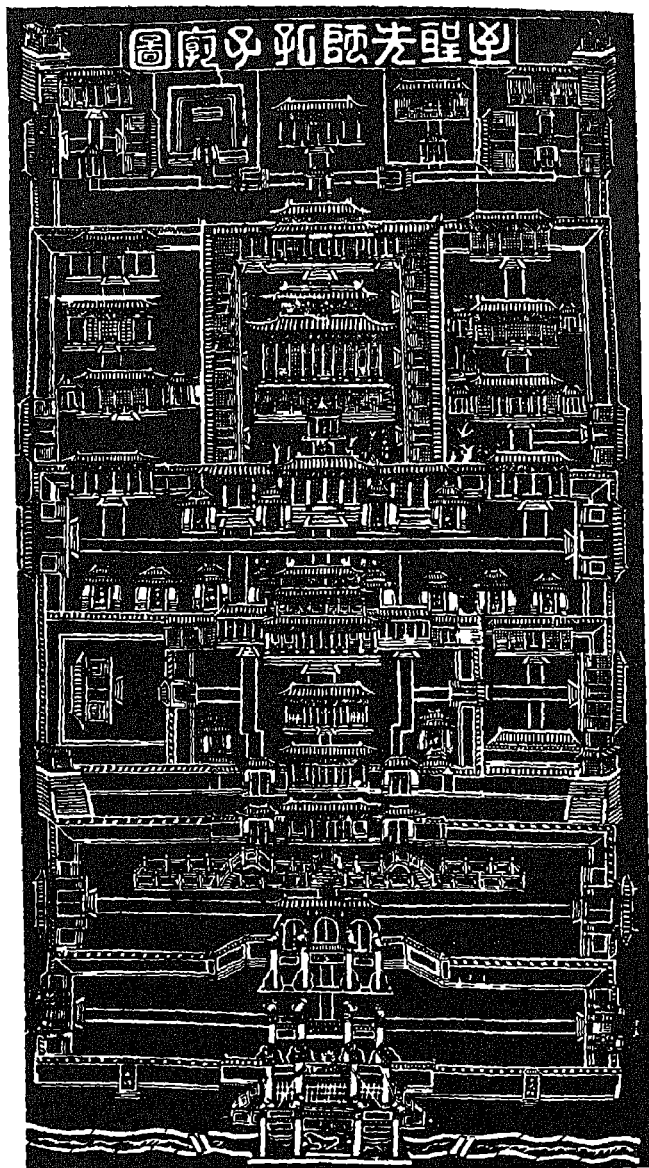



FIG. 60. *Pictorial plan of the Confucian Temple at Chu Fou, Shantung*

the crest of the mountain a ceremonial arch was erected as a gateway. A covered way led from the palace across the Wei River to Hsien Yang city. It symbolised the bridge T'ien Chi which crosses the Milky Way to the constellation Ying Chê."

Ssŭ-ma Ch'ien also says that Shih Huang Ti had erected, along the banks of the Wei river, copies of the palaces of all the kings whom he had conquered and despoiled. In these palaces the harems of the conquered monarchs and all the treasures and furniture of the originals were kept ready for a visit from the Emperor. Not content with these sumptuous buildings, Shih Huang Ti constructed several summer palaces and hunting lodges in the vicinity of Hsien Yang, and linked them together with covered ways and roads bordered with walls, so that he could pass from one to the other without his movements being known

The traditional account of Shih Huang Ti's palace may be somewhat exaggerated, but it is clear that under the new empire architecture received a strong impulse and buildings were conceived on a scale hitherto unknown. It was because Shih Huang Ti found the palace of his ancestors small that he built one more in consonance with his power and ambitions The palaces of the conquered kings which were copied upon the banks of the Wei, were no doubt also on a modest scale. An anecdote recounted by Chuang Tzŭ, some two hundred years before Shih Huang Ti's time, tends to show that the palaces of the feudal princes were quite modest dwellings This is the story of Prince Wên Hui's cook, who applied Taoist principles to the domestic duty of cutting up a bullock. The Prince, delighted with his skill, was watching the operation from the hall of his palace. It is plain therefore that the cook was preparing the meat in the main courtyard in front of the Hall of Audience, which suggests that the palace of the Prince must have closely resembled the homely arrangements of a prosperous modern Chinese farm house. Even if Chuang Tzŭ invented the story to point a moral, it is none the less clear that the possibility of a Prince being able to observe the domestic activities of his cook from the audience chamber did not appear incongruous to men of the Feudal Age.

Fortunately we have other evidence of the building activities of the Ch'in period. The Great Wall, though often repaired and refaced, was planned and linked together by Shih Huang Ti; although probably only the core of the modern wall is Ch'in work, the design and the trace of the wall were planned by the great Emperor, and subsequent generations have only restored or maintained his monument Anyone who has seen this stupendous fortification following the crests of precipitous mountains, scaling the steepest slopes, curving and winding among the barren hills of North China for hundreds of miles, will not find it difficult to believe in the splendours of the Hsien Yang palaces.

Apart from the remains of the earthen mounds which formed the terraces, nothing survives of the Han, Sui and T'ang palaces at Ch'ang An and Lo Yang. There exist, however, literary sources giving the plans and dimensions of the two capitals of the T'ang dynasty, Ch'ang An and Lo Yang. From these sources it is possible to obtain a clear idea of the design of the great buildings of the capital, and the plan of the city itself In the T'ang period Ch'ang An was a very large city, covering an area several times as great as the modern town of Sianfu, which is built on the site of the Imperial City of T'ang times, and incorporates the south and west wall of the 7th century capital.

The general design is reminiscent of the plan of Peking, proving that the Ming Emperors were using a city plan which was already of great antiquity (Map 16). As in Peking, the plan of Ch'ang An (see Map 9) was rectangular, the city itself enclosing a smaller walled area, called the Imperial City, in which the officials and members of the Imperial clan had their residences. The Palace City, corresponding to the Forbidden City of Peking, was situated inside the Imperial City, but unlike Peking, at Ch'ang An the Palace City was not in the centre of the Imperial City, but occupied its northern half, sharing a common north wall with the two larger cities surrounding it Beyond this north wall was a vast Imperial Park, the Chin Yuan, or Forbidden Garden, in which, at a later date, the Emperor T'ai Tsung built another Palace City, called the Ta Ming Kung, detached from the general design. The plan of these buildings exactly corresponds to their

successors at Peking, and is in fact the original Chinese courtyard house on a very large scale.*

The descriptions and plans of Ch'ang An as it was under the Sui and T'ang dynasties prove that in Peking the Ming Emperor Yung Lo, who built the city as it now stands (Map 16), was copying, with slight modifications, an ancient city plan, probably dating back far earlier than the T'ang period. If the Ming builders showed no originality in design their work was none the less a masterpiece. An important innovation, the coloured porcelain tiles which are such a distinctive and beautiful feature of the palace roofs at Peking, is found in Ming buildings intended for imperial use, and on some temples This feature was a consequence of the improved technique in glazing and porcelain manufacture. In the grace and strength of their lines and the harmonious grouping of the buildings themselves the Ming architects cannot easily have been surpassed in any previous age.

The Forbidden City—Tzŭ Chin Ch'êng, the Purple Forbidden City, is the full name—is a rectangular enclosure, defended by a crenellated wall and wide moat, standing almost exactly in the centre of the city of Peking itself There are four gates, three of which, in the south, east and west walls open into the grand courtyards flanked by the halls of audience and official buildings which occupy the southern half of the enclosure. This part of the palace was accessible to ministers and officials for audience with the Emperor and for official ceremonies and functions. The northern gate opens directly into the private part of the palace, occupied by the Imperial family and concubines, to which no one except the eunuchs had access.

The southern half is arranged in a series of spacious courtyards faced by magnificent halls and gateways, a perfectly symmetrical and harmonious grouping designed for ceremonial occasions, and well calculated to impress the visitors with a sense of the power and splendour of the Son of Heaven The northern half of the palace, divided from the ceremonial courts by a continuous wall, is arranged on a more intimate plan. These residential quarters are cut up into a maze of courtyards, gardens and alley-

*Map 9 reproduced from the two Chinese books dealing with the T'ang capitals, the *Ch'ang An chih* and *T'ang liang ching Ch'eng fang K'ao*

MAP 16. *Peking, and Cities formerly upon the same Site.*

ways, a complexity of buildings in which the imperial family and the concubines each had their own separate apartments. Here symmetry and grandeur give place to domestic convenience

The emperors of the Ming and Manchu dynasties, who successively lived in this palace for over 500 years, did not all occupy the same apartments As fancy pleased them, or in the belief that one part of the palace had become "unlucky," they moved to different courts, and sometimes sealed up and abandoned the quarters of their predecessors Princess Der Ling, who was a maid of honour to the Empress Dowager Tzŭ Hsi, records how on one occcasion the Empress making a tour of inspection, found a range of buildings which had been sealed and disused for so long that weeds and bushes almost choked the approaches. On enquiry it was found that no one knew the reason why this palace had been closed up, though it was conjectured that some member of the imperial family had died there of an infectious disease No one then in the palace had ever been inside the deserted court *

In spite of the variety and extent of the residential quarters in the Forbidden City itself, the emperors found the close air of the city in the summer months unhealthy. From very early times the custom of moving the Court out to a summer palace in the vicinity of the capital had been followed, and the construction of these less formal residences called into existence a rather different architectural style Ch'in Shih Huang Ti, as has been mentioned, built many summer palaces, which were at the same time hunting lodges, in the vast parks which he maintained round his capital. The Han and T'ang Emperors, and in particular the extravagant builder Sui Yang Ti, followed his example, and though no traces of these buildings and gardens remain, the description of them which historians have preserved show that they must have been planned on the same lines as Ch'ien Lung's Yüan Ming Yüan, about ten miles from Peking, a vast park containing many palaces and pavilions which was destroyed by the British and French armies in 1860. The existing Summer Palace, a partial restoration of the Yuan Ming Yuan, made by

* *Two Years in the Forbidden City* Princess Der Ling. London. 1912. p 318.

the Empress Dowager in the 'nineties gives but a faint and imperfect idea of the original.

Just as grandeur and formality combined into a symmetrical harmony was the keynote of the formal Palace Cities of which the Forbidden City in Peking is the last representative, in the summer palaces the architects sought informality, charm, and an artificially enhanced ruralty Where lakes or hills were lacking, they were constructed at immense cost and labour to provide every form of natural scenery and variety Trees were planted, or transplanted, as by Sui Yang Ti who caused well grown forest trees to be brought on specially constructed carts from distant forests. A delicious landscape was fashioned which excelled in charm and unexpected beauty anything which unaided nature could provide, and imitated the scenery of the landscape painters. Among the woods and streams, on the edges of lakes, and the slopes of the hills pavilions designed to harmonise with their surroundings were scattered in apparently haphazard, but really carefully planned design—each was self-contained, so that the imperial owner could move from one to another as caprice moved him, and find everything prepared for his reception.

The splendours of these imperial pleasaunces were reproduced, on a more restricted scale in the gardens of the wealthy families, both in the city and in the neighbourhood. No people—except the English—have been more successful in the art of creating gardens and country residences than the Chinese, and the success of the two peoples at this art is due to like cause. The Chinese, in spite of their large and populous cities, have always been closely in touch with rural life, always in love with natural beauty. From an early date the belief in the purifying moral effect of living in lonely and remote mountain country was strong in China. Taoist sages withdrew to the forest-clad slopes of the higher mountains and refused to descend even to share the highest honours offered by the emperors Many of the best known scholars and poets lived for years in the depths of the country, rarely visiting the cities The horror of wild scenery, which was so characteristic of Europeans in the 17th and 18th centuries, was never shared by the Chinese.

The introduction of Buddhism does not seem to have effected

any major change in the design of Chinese temples. Taoist and Buddhist temples are built upon the same plan, which is precisely that of the Chinese house, modified for religious purposes. The courtyard arrangement, with flanking halls is the same as in the residential houses, the main halls in the front courts being assigned to the worship of the gods, or the Buddha, while the domestic quarters at the rear of the temple are the residential apartments of the monks. In the decoration and ornamentation of the principal halls some motifs have been introduced which are of Buddhist origin and show the influence of Greco-Indian art, particularly the caryatides supporting the roofs in the K'ai Yüan Ssŭ temple in Ch'üan Chou, Fukien.*

Although the existing buildings of the K'ai Yuan Ssŭ are Ming (A D 1389) the temple was founded in the T'ang dynasty. It is therefore very probable that the caryatides now existing were copied from the earlier T'ang structure, a period in which foreign influences were strong.

The pagoda, usually regarded as the most characteristic Chinese type of structure, has been conjectured to be of Indian origin There is, however, very little resemblance between the Indian stupa monument on its low base and the lofty Chinese pagoda. Although the latter is now only found at Buddhist temples its true origin would seem to be the pre-Buddhistic Chinese storied tower, shown in Han bas-reliefs as flanking the main hall of important buildings, of which a sketch is reproduced in Fig 61.

These Han towers usually have two stories with projecting roofs, similar to those of the modern pagoda. On the other hand the Han tower seems to have been very slender, indeed it would appear doubtful whether in some cases it was more than a solid

*Bulletin No. 7 of the Catholic University of Peking Atlantes and Caryatides in Chinese Architecture, by Dr Gustav Ecke. Dr Ecke, who is an expert on Chinese architecture, states that he knows of no other Chinese temple which has true caryatides. If the K'ai Yuan Ssŭ is in fact unique in this respect, this feature can hardly be regarded as a characteristic of Buddhist architecture in China It is of course possible that caryatides were more common in temples of the earlier dynasties, when Greco-Indian influence was stronger, and that this feature was not maintained when the buildings were restored in Ming or Manchu times Very few Chinese temple buildings can be assigned to a date earlier than the last two dynasties

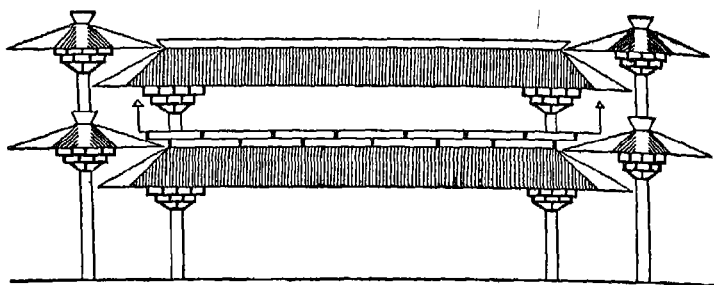



FIG. 61. *Han mansion with flanking towers. Sketch from a bas-relief.*

pillar of masonry. While the relative size of buildings cannot always be inferred from the scale shown on the bas-reliefs (for the artist emphasised the size of the subjects he considered to be the most important) it seems that these towers, usually placed on either side of a large hall, were very little higher than the roof ridge of the hall itself The pagoda thus seems to have gained both solidity and height in later centuries (Plate XVI).

It is particularly in religious buildings, pagodas and temples, that the existence of two distinct styles in Chinese architecture is apparent. These two styles are usually called the northern and southern, though their distribution does not always follow strictly geographical lines In Yunnan, one of the most southerly provinces in China, the northern style is dominant, and in south Manchuria there are some examples of the southern style. These exceptions are due to historical causes Yunnan received strong northern influences in the Ming and early Manchu periods, while southern Manchuria was influenced from the south by the sea route.

The chief differences between the two styles are the degree of curvature in the slope of the roof and in the amount of ornamentation with which the roof ridges and eaves are decorated In the southern style the roofs are sharply recurved until the projecting eaves at the corners turn upwards like a horn (Fig. 62). The roof ridges are often heavily encumbered by rows of small figures representing Taoist deities and mythological animals, in such profusion that the lines of the roof itself are almost obscured. Eaves and

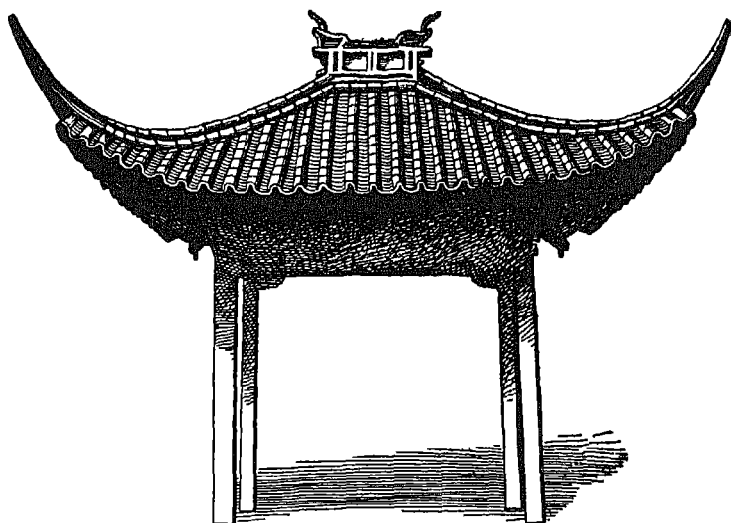



FIG 62 *Southern style pavilion. After Sirén, Chinese Architecture.*

pillars are carved and decorated in a similar way, leaving very little of the surface smooth and unornamented. The extreme examples of this taste for over-decoration—the buildings which inspired the *chinoiserie* of the European 18th century—are found in Canton and the provinces of the southern littoral From the artistic point of view they are not easy to admire, for while the ingenuity of the carving and decorations is sometimes pleasing in itself, the lines of the building as a whole are lost and the general effect is tortuous and overburdened. Chinese taste is turning away from this style, and even in Canton itself recent public buildings such as the Kuomintang Memorial Hall have been built in the northern style.

The northern style is often called the Palace style because the best examples of this architecture are the magnificent buildings of the Forbidden City and the imperial tombs of the Ming and Manchu dynasties. In the Palace style the curve of the roof is gentle and restrained, and has been compared to the slope of the roof of a tent, although the belief that this style was inspired by memories of the great tents of the nomad Mongol Emperors has

no foundation in fact.* Ornamentation is also less florid and more limited. Roof figures are confined to the corner ridges, and are smaller and more stylised than the elaborate groups represented on southern buildings. In Shansi a happy compromise between the over-elaboration of this feature in the southern style and the stylisation of the Peking palaces occurs. Here the roof ridges are decorated with graceful and vigorous little figures of men mounted on galloping horses.

The origin of the two styles is obscure In the Han models and bas-reliefs, the earliest representation of Chinese buildings so far known, the curvature of the roofs is very slight; indeed, in some instances there does not appear to be any at all, though whether this is due to the technical limitations of the potter or sculptor, or whether it really represents an earlier design is doubtful. In T'ang reliefs and Sung paintings the curvature is present, but never approaches the degree seen in existing buildings in the southern provinces On the other hand the extreme emphasis of this feature is particularly noticeable in Burmese and Indo-Chinese architecture which suggests that the style may have come from contact with these southern neighbours. In Japan, which received its architectural tradition largely from T'ang China, the curve is slight, conforming to the northern Chinese style

With the exception of a temple in the Shansi mountains discovered by Dr. Liang Ssu-Ch'eng in 1937, the only wood and brick building of T'ang date which still survives, is in Japan, and not in China The Kondo or Golden Hall of the Horyuji monastery, built in A.D. 607 and probably rebuilt after a fire a century later, is a beautiful example of the style of architecture practised by the T'ang (Fig. 63), a style often represented in Sung paintings, and consequently sometimes known in China as the Sung style. It differs from the Ming style in one important respect. In the Kondo only the front and rear faces of the roof are continued uninterruptedly to the eaves, and on the east and west faces the upper part is gable-ended. In the Ming style the four faces of

*This theory has received wide publicity, though based on no evidence and actually contradicted by representations of buildings in Sung paintings, T'ang and Wei reliefs and the existing temples at Nara in Japan, which were built in imitation of T'ang models Moreover the form of the nomad tent is round, in no way resembling the western marquee.

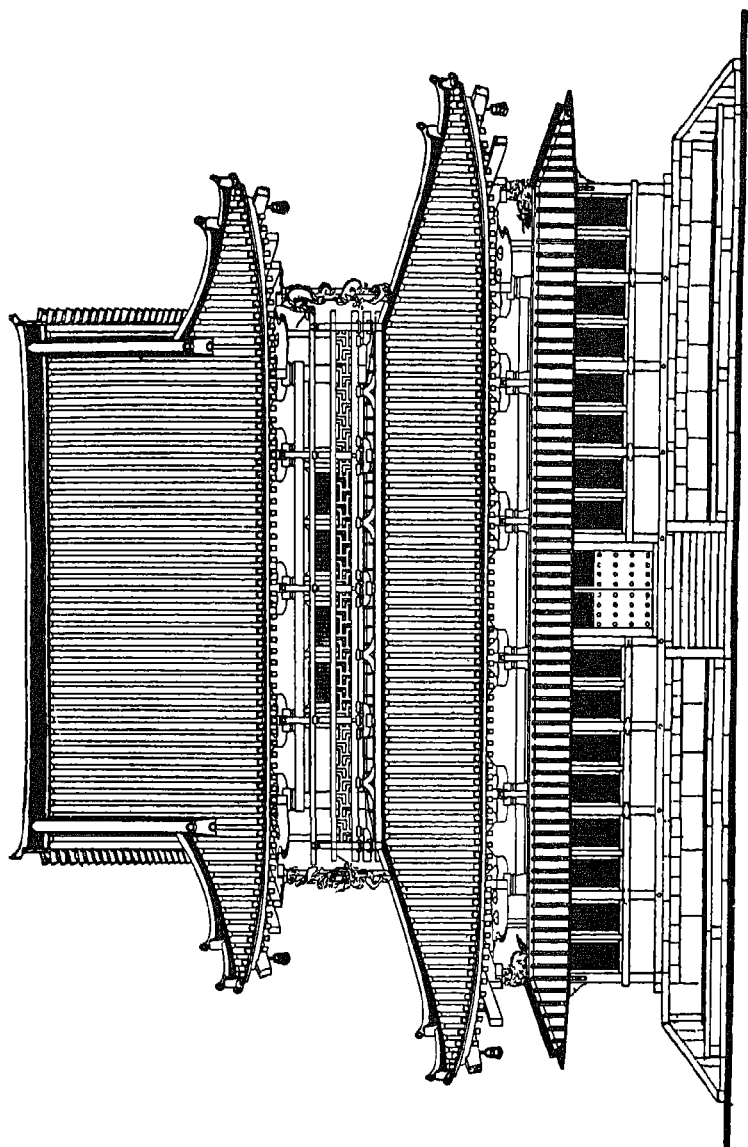



FIG. 63. *The Kondo, Nara, Japan.*

the roof are treated in the same way, all sweeping down in an uninterrupted curve to the eaves. This is the style adopted in the Wu Men, the main south gate of the Forbidden City (Plate XVII), as well as in several other halls and gates in the palaces at Peking. The Sung style continued to be used in conjunction with the Ming, and the Forbidden City contains numerous examples of pavilions and halls in which this treatment of the roof accurs.

The characteristic feature of every Chinese city is its wall. No city is without a fortified wall, and this fortification is so essential to the Chinese idea of a city that the words for "city" and "wall" are identical; *ch'êng* means both a city and the wall of a city. It is only in modern times that some cities have been deprived of their fortifications, and only as a result of foreign commerce on the coasts and rivers that certain market towns have grown to the status of cities without being girdled with a wall. This feature which gave a city its status, which was in fact the essential attribute of cityhood, naturally received the greatest care and the most thorough workmanship. Therefore the Chinese city walls are in a class apart, by far the most solid and impressive in the world.

It was particularly in the northern provinces, which were more often exposed to nomad incursions, that the art of wall building attained its highest development The walls of the so-called Tartar City of Peking, in reality Ming work of the early 15th century, are well known, and justly famous.* Walls as solid and as high are commonly found in all the cities of the north-west provinces, and particularly in Shansi where every *hsien* or sub-prefecture has walls as imposing as those of the capital, although not as long. As they exist to-day most of these city walls are Ming work. After the expulsion of the Mongols the Chinese Emperors of that dynasty found it necessary to restore the fortifications of the cities in the border provinces, which had been neglected by the nomad peoples who had ruled the north since the fall of the Northern Sung dynasty.

*The expression Tartar City is not Chinese To the Chinese the original city is known as the North City, and the southern extension, called the Chinese city by foreigners, is the South City. Both are the work of Ming Emperors, owing nothing to the Manchu conquerors.

In town planning and fortification there are two styles in China, which like the two styles of architecture belong to the north and south respectively. In the north, where the builders had plenty of space, and a choice of level unencumbered sites, the plan of the cities is always rectangular, and the city is divided into four quarters by two straight streets meeting in the centre of the town. Except in the largest cities there are only four gates, each in the centre of one of the side walls. The junction of the two principal streets is defended by the drum tower, a large fortified four-way gateway which is built over the cross-roads so that in times of riot or disorder each street can be isolated from the others In the three-story pagoda-like tower which crowns this gateway troops were stationed, and here was sounded the great drum which acted as a public timepiece marking the hours of the day.

Regularity and symmetry mark the arrangement of the gates and two main streets, similar to the Roman *decumanus* and *via principalis*, but the residential lanes which cut up the four quarters of the city are usually arranged on no fixed plan, but meander and twist as the size and shape of the houses dictate. It is rare to find Chinese cities divided into a rich and poor quarter. The large houses of the well-to-do, with their many courtyards and gardens, jostle the small single courtyard houses of the poor in the same lane If one part of the city is more liable to be flooded by the summer rains than another, the low-lying part is not favoured by the wealthy, but even here large houses will be found as well as the cramped quarters of the poorest class.*

The city walls in the north are built to resist the danger of floods as well as attack by the enemy The core of the wall is a solid mound of hard clay which is faced both on the outside and the inside with very large bricks measuring 2 feet by 6 inches, and some 4 to 5 inches thick The top of the wall is also paved with these bricks. The wall is tapered, so that though 40 feet thick at the base, it is not more than 20 to 25 feet thick at the top. The

*In Peking the eastern half of the city, and particularly the south-east corner, was regarded as damper than the west. For that reason it was this eastern corner which was allotted to foreigners when they established legations in Peking Even to-day, when the drainage of the whole city has been modernised, Chinese of means prefer the western part of the city.

height varies, but in the Shansi cities, Peking, and at Sianfu (the ancient Ch'ang An) it is not less than 60 feet. At intervals of some 50 to 100 yards large bastions are built out from the curtain wall, being about 40 feet square at the top. The moat runs at the foot of these bastions leaving a strip of unoccupied land between the moat, the curtain wall, and the bastions

Towers are erected at the four corners of the wall and over the gates. The corner towers are fortified on the outer faces, which are built of brick and loopholed for cannon. The gate towers, designed like a three-story pagoda, only rectangular, are built largely of wood with tiled roofs. These towers, which are the most striking feature of the city's architecture, were intended to act as living quarters for the soldiers on duty at the gate, and as posts for archers or sharpshooters in time of war. The gate towers of Peking, which are the only part of the city visible from a distance, are 99 Chinese feet in height. One hundred feet from the ground, according to Chinese demonology, is the zone in which evil spirits commonly fly, so the towers were deliberately designed to reach the maximum height free from these malign influences. The city wall and corner tower of T'ai Ku Hsien in Shansi is a fine example of Chinese military architecture (Plate XVIII).

The gates of important cities are usually defended by a semi-circular outwork, in which there is an outer gate, placed at right angles to the opening of the main gate so that if this outer gate was blown in there would be no free field of fire upon the main gateway. Occasionally a suburb beyond this outer gate would be roughly fortified with a clay wall unfaced with bricks, more to prevent it being plundered by bandits than to assist in the defence of the city itself. Before the introduction of modern artillery the city walls were almost indestructible. Their solidity made any attempt to breach them by mining or bombardment a hopeless task. Their height made an escalade very difficult and hazardous. A city resolutely defended could withstand the attack of the largest army, and Chinese history has many tales of famous sieges and heroic defences. Famine and blockade was the only certain way of reducing a city so defended, and the large population of most Chinese cities, and their dependance on the

daily marketing of the country produce, made this the more certain method.*

The city walls of north and north-west China are in every respect superior to the defences of the southern cities. In the south, on account of the high value of rice lands and the irregularity of the terrain, few cities can be planned on the spacious scale and symmetrical design used in the plains of the north Streets are narrow and winding, the walls lower, though often built of stone, and the gates narrow. Wheeled traffic was almost unknown in the south until modern times The sedan chair, the pack mule, porters and wheelbarrows made up the traffic of the streets which therefore did not need to be wide. In Canton many of them were little more than alleys only wide enough for two men to walk abreast In the south the principal means of travel was by boat, and nothing but local traffic coming to and from market entered the city by land On the other hand the southern cities were not often exposed to attack by invaders, therefore less care was paid to the fortifications.

*Even field artillery is useless against a really strong city wall. In 1926, Sianfu (Ch'ang An) was besieged for over five months by an army equipped with field guns, but no heavy artillery The city was successfully held for this long period against every attack The damage done to the walls by the bombardment is insignificant Only the parapet of brick has suffered severely On the other hand the blockade inflicted the most horrible sufferings on the inhabitants, of whom several thousands died of starvation and disease.

PART SEVEN—CHINA UNDER THE MANCHUS

Chapter XXVII

THE MANCHU CONQUEST

Two sovereigns had already ruled over the united Manchu nation before the empire of the Ming dynasty fell into their hands Nurhachu, the civiliser of his people, founded the kingdom in 1618 on the banks of the Sungari river, in what is now Kirin province, Manchuria.* His son, succeeding to the throne in 1625, established the capital at Mukden and conquered the Ming province of Liao Tung, corresponding to the modern south Manchuria. These additions to the Manchu kingdom still left the Chinese in possession of the line of the Great Wall and all the country to the south of it. In spite of raids and forays the Manchu armies had failed to dislodge the Ming hold on this strong defensive line, which effectively barred their way to any permanent conquest of Chinese territory Had the Ming Empire not succumbed to internal rebellions it is probable that the Manchu kingdom would never have exceeded these limits.

The Manchu conquest of China proper was in fact due to a combination of circumstances, largely accidental. Consequently there was a fundamental difference between the character of the conquest in the northern and southern provinces of China respectively. The Manchus occupied northern China by consent, unopposed: they conquered the south by force after a long and bitter struggle. This fact dominated the later history of the dynasty, and still to-day explains the differing attitude of the northern and southern Chinese towards the Manchu dynasty and the imperial system.

In 1644 the Manchu Court was not prepared to undertake a

*The name, Manchuria, is unknown to the Chinese and Manchu languages. It is a foreign term coined by Europeans The Chinese name for this region was anciently Liao Tung, the land "east of the Liao" (river) After the Manchu conquest the three provinces of Manchuria were collectively known as "the three eastern provinces" The Manchus designated their empire as "Ch'ing" (Pure) and in accordance with the Chinese custom the official name of the empire was that of the dynasty reigning Manchukuo, the name given to Manchuria during the Japanese controlled puppet regime 1931-1945, was merely a translation into Chinese of the word "Manchuria." To the Chinese the country is commonly known as Tung Pei, the North East, and has been divided into nine provinces

war of conquest. The second Manchu Emperor, T'ai Tsung, had died the year before, leaving his throne to his son, a boy of eleven The government was administered by a regency composed of the late Emperor's brothers, and in such circumstances the regents would not have contemplated embarking on so vast and hazardous an enterprise as the conquest of China, if they had not been presented with an opportunity too good to be missed and never likely to recur. For the road was opened to them to enter China, by invitation, as allies.

Li Tzŭ-ch'êng, the Chinese rebel leader who had already overrun the western provinces and shattered the authority of the Ming dynasty in the north, captured Peking in 1644 and proclaimed himself Emperor of a new dynasty, the Shun. The Ming Emperor had committed suicide, and the Chinese people, weary of the misrule of the eunuch-ridden Ming Court, would have accepted a new native dynasty with relief. Li Tzŭ-ch'êng, although a man of little or no education, was an able general, an adventurer of exactly the same type as the founder of the Ming dynasty itself Under a vigorous imperial family, sprung from the people and backed by a war trained army, the new dynasty would have had little to fear from the Manchus

Even during the distracted reign of the last Ming, a Chinese army, encamped at Shan Hai Kuan, where the Great Wall reaches the sea, had successfully prevented the Manchus from effecting a permanent conquest of any territory south of the Great Wall. This army, commanded by an able general, Wu San-kuei, was still intact. If Wu San-kuei had accepted the revolution at Peking, and submitted to the new Emperor, Li Tzŭ-ch'êng's Shun dynasty would have been established beyond dispute. There was no good reason why Wu should do otherwise, for as his subsequent conduct proved, he was not a fanatical adherent of the Ming dynasty.

The reasons why Wu decided to oppose rather than to accept the pretensions of Li Tzŭ-ch'êng remain something of an historical mystery, but it is nearly certain that it was no consideration of state policy or far-sighted ambition, but rather a personal quarrel. Li Tzŭ-ch'êng, after the fall of Peking, took into his own harem a singing girl of great charm and beauty who had been

Wu San-kuei's concubine. Moreover he refused to deliver this lady to her rightful husband, when Wu San-kuei demanded her. This personal quarrel wrecked the negotiations; Wu San-kuei refused to recognise the new dynasty, and with rather tardy and doubtful loyalty proclaimed himself the avenger of the Ming Emperor. Then he opened the fortress of Shan Hai Kuan and invited the Manchus to come to his assistance.

Whatever Wu San-kuei expected to be the final result of this step, it proved to be fatal to the ambitions of all the Chinese claimants for the throne. Li Tzŭ-ch'êng was defeated by the combined armies, and forced to abandon Peking. He retreated into the western provinces, relentlessly pursued by Wu San-kuei, who finally destroyed the Shun pretender and ruined his party. Meanwhile the Manchus, leaving Wu San-kuei to prosecute his vengeance, quietly occupied Peking and proclaimed their boy sovereign Emperor of China.

The Ming administration in the north had already collapsed. The Manchus were therefore able to occupy all the north of China, and much of the north-west also, without meeting the least opposition. In the south, on the contrary, a Ming Prince was recognised as Emperor at Nanking, and other princes organised resistance at Foochow and Canton. The Manchus left the conquest of these pretenders to Wu San-kuei and other Chinese generals who had submitted to them. Only small detachments of Manchu troops were employed against the Ming pretenders and the remnants of Li Tzŭ-ch'êng's army. This first conquest of the south was completed after eighteen years of continual fighting by the flight of the last Ming pretender into Burma. The southern provinces were then divided between three Chinese princes, Wu San-kuei in the south-west, and two less powerful ones on the east coast. Direct Manchu rule did not extend south of the Yangtze, and even in the north-west the hold of the conquerors was weak and menaced by serious rebellions.

During the first thirty years of the new dynasty the empire was thus only superficially obedient to the Manchu Court, which, under the rule of the Emperor Shun Chih (1644-1661) was lax and feeble. Shun Chih himself had fallen under the tutelage of the eunuchs whom he found in the Peking Forbidden City. He

devoted most of his time to Buddhist religious exercises, gradually becoming a religious fanatic. At his death in 1661 the new dynasty was far from secure, while the succession passing to a boy of eight made another regency with its attendant dangers a further source of weakness. Few could foresee that the child Emperor who now succeeded was to be the saviour of the dynasty, the great K'ang Hsi.*

If Wu San-kuei, who was still ruling the south-west as a nominally subject prince, had chosen this moment to repudiate Manchu rule, he would almost certainly have driven the new dynasty from the throne. Instead, he waited ten years. It was not until 1673 that the great revolt of the south broke out By then the young K'ang Hsi had dismissed his regents and taken over the government himself, and he proved from the first to be a ruler of character and decision None the less the revolt of Wu San-kuei very nearly broke the Manchu power. All south China was immediately lost to them. Wu had an alliance with some Mongol tribes, and invaded the north-west to make contact with them.

The failure of this formidable combination was largely due to the defection of the Chinese princes of the coast provinces, who after supporting Wu, submitted to the Manchus, and were dethroned for their pains. The re-conquest of the coast, and the defeat of the Mongols, would not have saved the dynasty if Wu himself had not been too old for the fatigues of a long campaign After five years of successful resistance he died, still undefeated and still in possession of all south-west China His sons did not inherit his ability or his authority, and they quarrelled among themselves. K'ang Hsi was able to suppress the great revolt and complete the real Manchu conquest of the south by the extermination of the Wu family when Yunnanfu, their capital, was captured in 1682. The effective reduction of the south to Manchu rule, therefore, did not begin until forty years after their peaceful occupation of Peking.

*According to a strong Peking tradition Shun Chih did not die in 1661, but secretly left his throne to become a Buddhist monk at a temple in the Western Hills, a few miles from Peking. The south-west gate of the Northern City is still commonly known as the Shun Chih Mên because it is said that it was by this gate that the fugitive Emperor fled from his capital.

The attitude of the Manchus towards their Chinese subjects in north and south respectively was determined by this fact. The north was loyal, and was trusted—up to a point. The south, embittered and rebellious, was feared, mistrusted, and oppressed The Manchus made Peking their capital, a city close to their home country and to their Mongol allies. All the benefits of the new government were felt in the northern provinces and in the capital; most of the revenue came from the south. The conquerors were only a handful in comparison to the numbers of the subject race. At the end of the dynasty there were some ten million Manchus in the empire, and about 350,000,000 Chinese, to adopt the more conservative estimate. Three centuries earlier the population, reduced by the long wars, was certainly less, but the proportion of Manchus to Chinese was no greater

It was obvious that the invaders could not hope to govern this huge empire without the co-operation of the Chinese themselves. It was equally obvious that if Chinese and Manchus were placed on an equality the Manchu minority would be completely swamped. To prevent this it was decided that one-half of the posts in the civil service should be reserved for Manchus, and one-half left to the Chinese. From the very nature of the Chinese Empire this meant an uneven distribution between the northern and southern provinces, which competed separately at Peking and Nanking respectively. The southern provinces accounted for the majority of the population, yet they were allotted only a quarter of the official posts

This meant that the competition at the examinations was far keener for the southerners than for the northerners, while for the Manchus there was little or no competition. Consequently, the southerners who succeeded tended to be the most intelligent element in the civil service, while the Manchu officials, almost certain of their posts from childhood, had no need of exceptional talents to qualify for office From this state of affairs two serious perils to the government developed Firstly the element which merited the highest positions, and, the most rapid promotion, the southerners, were the least trusted by the government, which feared to find the administration dominated by men drawn from the ever hostile south In consequence the southerners, and in

particular the Cantonese, did not obtain the posts to which their ability entitled them, and such treatment did not encourage their loyalty.

Even more serious was the unrest among the educated southerners who were not officials The keen competition which the limited number of posts made inevitable created a large class of unsuccessful candidates, men who were obviously better equipped for office than the Manchu officials, or than some of their northern countrymen, but for whom there was no opening under the Manchu government. This class has always provided the material for revolutionary movements, but owing to the reservation of half the posts to Manchus, the unemployed intellectuals were more numerous under this dynasty than ever before, and more dissatisfied. The southerners came to feel that the Manchu government was an empire run in the interests of the Court of Peking and its neighbouring provinces, but sustained by revenue derived mainly from the south.

There was much justice in this view. The revenues of the empire were spent in Peking. Superb palaces were added to the already extensive buildings left by the Ming Emperors. Temples and tombs were constructed at an immense cost, a cost met by taxing the rich provinces of the south, which derived no benefit whatever from these works. The entire Manchu nation, forbidden by law to engage in commerce or industry, was fed at the state expense on "tribute rice," which was levied from the south and transported to Peking and other Manchu garrisons.

Unlike the invaders of previous centuries, the Manchus never relaxed the barrier between conquerors and subjects The whole Manchu nation, organised into eight corps (the eight banners), was distributed in military garrisons throughout the provinces, and at the capital. They were maintained by the state, forbidden to intermarry with the Chinese or to have any other occupations than the service, either military or civil, of the state. Under such a system of enforced idleness, the Manchus gradually degenerated. Little ability was needed for a Manchu to obtain a government post, and the garrisons, condemned to a drone-like inactivity, soon lost the fighting qualities of their invading forefathers.

The evils of this system, though finally ruinous to the dynasty, were not at first apparent The long struggle in the south which marked the first period of Manchu rule prevented any rapid deterioration After the pacification of the south internal peace was maintained for over a century, thanks to the ability and personal qualities of the three Emperors, K'ang Hsi, Yung Chêng and Ch'ien Lung. The outward splendour of their reigns concealed the inward decay of the Manchu power, but when, early in the 19th century, the empire was faced with internal revolts and foreign wars, it was found that the Manchu garrisons were utterly unable to stem the tide of rebellion or repulse the foreigners.

For a century the Manchu government struggled against their Chinese subjects within and the foreign powers without. In this losing battle they were compelled to rely on Chinese troops of doubtful loyalty, inadequately equipped Rebellion at home and defeats at the hands of foreign enemies discredited the dynasty and finally involved the Chinese Empire in a comprehensive revolution, in which the disappearance of the Manchu dynasty was perhaps the least significant event

Nothing is more striking in the recent history of China than a comparison between the state of the empire in the 18th and in the 19th centuries Under K'ang Hsi and his two successors the Chinese Empire attained its maximum material prosperity both in the extent of the territory and the number of subjects governed by Peking, and in the renown and admiration of distant nations. The missionaries who first described China to the west regarded the empire as the equal, if not the superior (except in the matter of religious faith), of their native France. To them the empire of Ch'ien Lung was the most splendid, as it was certainly the most extensive in the world.

A complete change occurred in the next century. Internal rebellions and disastrous foreign wars followed each other—one might say engendered each other—in quick succession. The century which saw the coming of mechanical power and the rise of science in the west was for China a period of stagnation, bad government, weakness and decline The empire which had been the admiration of the 18th century Jesuits was by the end of the 19th century treated as a decrepit and backward absolutism,

destined to be carved up by the predatory imperialism of half a dozen foreign powers.

The cause of this swift decline was not political or economic mismanagement, but the psychology of the governing class themselves. Foreign rule is fatal to a native culture. If the foreign rulers are more civilised than their subjects they impose their own culture upon the natives, and the existing arts tend to sink to a despised position in which there can be no development. If, as was the case with the Manchus, the conquerors are barbarians who adopt the superior culture of the conquered race, the alien rulers instinctively favour all that is most conventional, recognised and orthodox in the native culture, and distrust all novelties for fear of being despised as uncivilised illiterates by the cultured native aristocracy.

Having no tradition of their own, they have no confidence in their power to judge art and literature This was the attitude of the Manchu Court. Under K'ang Hsi, Yung Chêng, and Chi'en Lung, the Manchu princes and courtiers became more Chinese than the Chinese themselves. They adopted and protected the most rigid Confucian traditions. The literature they patronised was modelled upon the classics of the Feudal Age, the poetry imitated the T'ang masters, the art looked back to the Sung Any art or any idea which did not conform to these models was ignored or despised. The Manchus were impelled to take up this attitude by policy as well as by a natural admiration for a great and ancient civilisation. They were a mere handful of warriors immersed in the vast number of their Chinese subjects. They realised that they could only govern the empire by enlisting the support of the Chinese scholars themselves, the traditional ruling class. Wholehearted patronage of the arts and literature which that class cultivated was the surest way to gain their esteem and secure their loyalty.

Consequently the Manchu Emperors devoted themselves to Chinese culture, but only to the orthodox Confucian tradition. Vast collections of classical literature were made at their command. The examinations became more conventional and classical, ever further removed from reality. Taoism, and with Taoism anything which seemed to smack of alchemy, was ignored. In this despised class of knowledge, not Confucian and therefore

unimportant, the new sciences developed in Europe were included. The Manchu Emperors employed Jesuits to cast cannon or make astronomical calculations, but they treated the scientific knowledge of these foreigners as a mere technical skill, such as that of a carpenter or jade carver, and never troubled to enquire whether there was a valuable theory of knowledge behind it.

This extreme conservative outlook was shared by the whole official hierarchy, Chinese and Manchu alike. Trained in a classical tradition which excluded all consideration of non-Confucian philosophy, and chosen by a highly competitive examination based upon the most conventional interpretation of that philosophy, the type of mind that entered the civil service was a mind closed to all idea of progress, almost incapable of grasping the possibility, still less the need, for change. The men who rebelled against this training or found this tradition unsatisfying, did not succeed in these specialised examinations, or if they occasionally passed into the civil service, they found an atmosphere so uncongenial that they either resigned, or were relegated to unimportant posts where they exercised no influence The system was self-perpetuating, seemingly immutable.

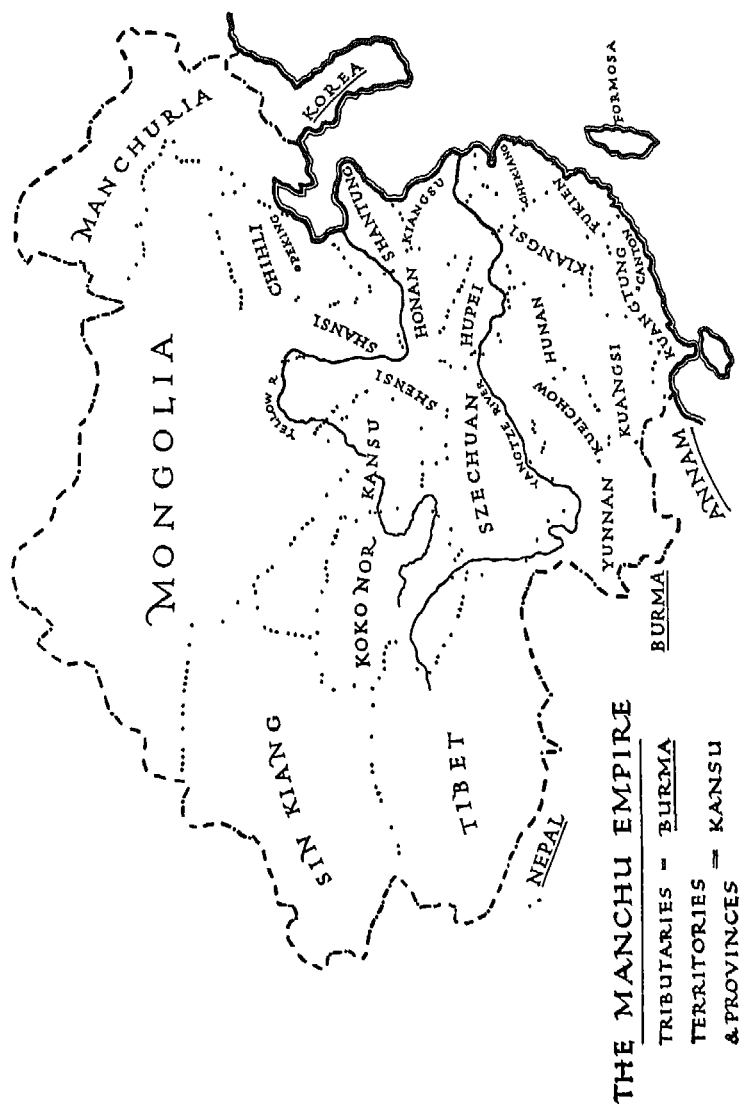
The real cause of the rapid decline of the Manchu Empire in the 19th century was intellectual stagnation brought about by the domination of a small alien ruling class, itself dominated by a petrified cultural tradition To the end the Manchus clung to this tradition as their sheet anchor The rising unrest, the progress of their foreign enemies—identified with change and the challenge of an opposing philosophy—only confirmed them in their belief that Confucianism was "for the Chinese what water is for fish"—a vital necessity. Every rebel movement was associated with some other doctrine. The White Lotus sect, which disturbed the closing years of Ch'ien Lung's reign, and the whole of that of his successor, Chia Ch'ing, was based on esoteric Buddhism The T'ai P'ing rebellion, which shook the dynasty to its foundations in the middle of the 19th century, was inspired by Protestant Christianity.

All these movements, and the activities of the foreign powers, with their missionaries and their pretensions to an equality with the empire, struck at the root conception of the philosophy adopted by the Manchu rulers. A native dynasty might have boldly

welcomed change and headed the party of the innovators, as happened in Japan, and as the T'ai P'ing leaders hoped to do, but the Manchus feared that if they abandoned the Confucian tradition they would lose the support of the Chinese scholar class, on which their dynasty depended since the degeneration of the Manchu bannermen. It was a fatal policy. If the Manchus succeeded for a time in conciliating the more reactionary scholars, it was at the price of alienating all the original and independent thinkers, ignoring the cause of popular unrest, and enfeebling the empire in the face of powerful enemies.

These consequences inevitably followed the attitude of rigid conservatism which K'ang Hsi, Yung Chêng and Ch'ien Lung adopted in the 18th century, the century of pregnant changes in European civilisation. At the time their empire appeared splendid and secure. For 120 years up till the end of the 18th century, there was unbroken internal peace. The conquest of Mongolia, Tibet and Turkestan incorporated territories lost since the T'ang dynasty or never previously part of the Chinese Empire Burma, Korea and Annam were tributaries Nepal suffered the only defeat and invasion the Ghurkas have sustained (1792). Map 17.

No doubt the exhaustion of the empire following the long wars which preceded and followed the fall of the Ming dynasty contributed to this long peace The south, which was the least loyal, had suffered the most, and for many years was too weak to rebel. Szechuan in 1649 had been ruled by a homicidal lunatic, the terrible Chang Hsien-chung, who butchered the majority of the population of that province. Eighty years after the Manchu conquest of this province, Father de Mailla, writing from China, declared that, in spite of every care and privilege, Szechuan had not recovered from this catastrophe. To this day the people of that province mostly descend from immigrants from Hupei and Shensi.*

*Chang Hsien-chung was a madman. He exercised a terrible fascination over his unfortunate subjects. At his orders his soldiers massacred their own wives so that the army should not be incommodated by camp followers. He erected a stone tablet in Chêng Tu, his capital, on which was written the one word "sha"—"kill," which was his motto. After his death the tablet was turned round and walled up so that the word cannot be read It is the belief of the people of Chêng Tu that if this tablet is exposed, Chang Hsien-chung will re-appear on earth and resume his bloodthirsty career.

MAP 17. *The Manchu Empire.*

The long reign of Ch'ien Lung (1735-1795) was the most glorious period of the Manchu dynasty, and has often been treated as the most glorious reign in Chinese history. Peace was unbroken within the empire until the closing years, when the rebellion of the White Lotus sect in central China heralded the coming century of disorder. Foreign wars expanded the limits of the empire to regions never before conquered Splendid additions to the palaces of Peking remain to attest Ch'ien Lung's magnificence. The population of the provinces rose rapidly. The Emperor himself, scholar and poet, in the classical and T'ang manner, was a strong and able ruler, who liked to be compared to T'ang T'ai Tsung, just as the Empress Dowager Tzŭ Hsi, in the next century, liked to be compared to the T'ang Empress Wu.

A flattering comparison, but if the grounds of it are examined the true weakness of the Manchu dynasty is revealed. T'ang T'ai Tsung reigned for twenty-two years, after pacifying and reorganising an empire which he had found in the utmost confusion. After his death 150 years of peace, the result of his life work, remained as his monument Ch'ien Lung reigned for sixty years over an empire which he inherited in a condition of profound peace and prosperity He was hardly dead before rebellions broke out on all sides, and within half a century the empire was invaded with ease at all points by a handful of English troops.

The founder of the T'ang dynasty prepared the way for the most brilliant century in Chinese history, the golden age of poetry and the arts. Ch'ien Lung's reign was followed by a century of confusion and decline The empire of Ch'ien Lung was a facade, splendid and imposing, but masking intellectual and artistic stagnation, and gross corruption in the official class. Chia Ch'ing's first act—when his father was dead—was to arrest and imprison his father's chief minister and favourite, the Manchu Ho Shên. His confiscated wealth was escheated to the throne, and amounted to the enormous total of 223 million taels, or 70 million sterling, the gleanings of his long years of power. This fabulous sum, all in specie, gems or real property, testifies at once to the wealth of the empire, the corruption of the ministers of state, and the blindness of Ch'ien Lung to the realities of his reign

The history of China during the 19th century is comparatively

well known, and has been very fully dealt with by many foreign writers. For the Manchu dynasty it was a period of constant decline and catastrophe. The Opium War with England (1840) was followed ten years later by the great T'ai P'ing rebellion, which starting in the far south, swept across China to within 100 miles of Peking, and came within an ace of substituting a Chinese dynasty for the ruling house. For nearly nine years the T'ai P'ing, "Heavenly King," Hung Hsiu-ch'uan, ruled half China from his capital at Nanking. When at last the rebellion was suppressed, it was due not to the state-maintained Manchu bannermen, who were useless as fighting troops, but to Chinese armies led by the Englishman, General Gordon, and by Tsêng Kuo-fan, a Chinese.

Thus, a movement which would, there is good reason to suppose, have done for China what the almost contemporary Meiji restoration movement did for Japan, was crushed by the alliance of capitalist imperialism and Manchu despotism China was doomed instead to another fifty years of incompetent and obscurantist reaction under a Court ruled by the Empress Dowager Tzŭ Hsi and her eunuchs. When this forceful woman died the dynasty swiftly collapsed in the face of an incoherent national rising led by idealistic republicans, but backed by self-seeking generals.

This miserable half century was the close of the old era. The compact, integral, Chinese civilisation was now in contact with world forces which could not be shut out and which were certain to exercise a profound influence. A study of the impact of these new ideas and inventions, which have combined to involve China in the most far-reaching revolution of her long history, must go back to the middle of the 19th century for a starting point. It is impossible to deal adequately with this vast transformation in one or two chapters at the end of a book. The history of modern China is a subject in itself.

Chapter XXVIII

THE ECONOMIC CONSEQUENCES OF SEA-BORNE TRADE

By the middle of the 18th century the foreign trade of China had become concentrated at Canton, the only port at which European ships were permitted to call The jealous suspicion which characterised the attitude of the Manchu government towards the southern provinces had led to the exclusion of the old marts at Ch'üan Chou, Amoy and Ningpo from any share in this commerce, in spite of repeated efforts to effect an opening made by the English, Dutch and other maritime nations The Canton monopoly was not imposed through any consideration of favour for the inhabitants of that city, it was due rather to the determination of the Court to limit trade to one port, and that the furthest from the heart of the empire and the seat of government.

The Manchu government remained to the end incurably suspicious of the results of contact between its Chinese subjects and foreign nations. The Yangtze valley was the most disaffected area in the empire, the region in which the White Lotus and other rebellions took their rise Consequently these provinces could on no account be permitted to have direct intercourse with the foreign traders, from whom the rebels might obtain assistance The Court had some reason for these fears Contact with foreign peoples did indeed stimulate the latent antagonism to Manchu rule which was felt throughout the south. Every rebellion against the dynasty soughtthe sympathy of the foreigners, and Canton itself, precisely because it was the centre of foreign trade, became in the end the focus of the anti-Manchu movement.

The Canton monopoly was of course none the less a very valuable privilege for the southern city, and one which it strove hard to keep. In this respect the merchants of Canton itself found themselves in accord with the Court, and with the officials ruling Canton, who were of course either Manchus or natives of other provinces, for the Manchus never permitted any Chinese official to serve in his native province. The merchants were anxious to retain a valuable commercial monopoly, the Court

wished to keep the foreigners to one port, and the officials of Canton were determined to maintain their monopoly of the enormous corrupt extortions which they exacted from the trade. Against this alliance of vested interests, disunited though they were on other matters, the foreign traders and ambassadors of the 18th century strove in vain Nothing short of armed attack could break the Canton monopoly.

Yet the economic objections to Canton as the sole port for the Chinese Empire were serious. Tea and silk were the only exports of any importance, and both these commodities were produced in provinces far to the north, in the Yangtze valley. For this area the true outlet was some port in the Yangtze delta, such as Hang Chou had been in the Sung dynasty, and Shanghai was to become in the 19th century. Canton was most awkwardly situated for this trade. Every bale of silk and chest of tea had to be transported by a tedious land journey through Kiangsi province, over the Mei Ling pass, and down the East River to Canton, a distance of at least 500 miles. Even the coastwise transport of goods to Canton was prohibited. Not only was the risk of piracy very great, but the government fearing that once goods were on the sea they would be beyond the reach of its tax gatherers, absolutely forbade the coasting trade.

Under the Manchu dynasty China suffered from two dangerous anomalies, economic and political. The capital was tucked away in the furthest north-east corner of the empire, and the chief centre of trade was situated near the equally inaccessible southern border. Both were remote from the main centres of population and production, and their distance from each other, more than two thousand miles, contributed potently to the total lack of economic common sense which distinguished the Manchu administration. These geographical considerations greatly influenced the economic development of China under the Manchu dynasty, and in turn, determined the political fate of the empire.

The Manchu government was carried on by two classes of men, neither of which had the least training in or understanding of matters of trade. The Manchu nobility had been a warrior caste, forbidden by law to engage in commerce. From the reign of Ch'ien Lung onward they became a degenerate and spendthrift

aristocracy, solely concerned to extort the money which their extravagances so rapidly dissipated. The other class, the Chinese scholars, owed their rank and position to proficiency in a pedantic knowledge of the ancient classics, and were neither expected nor encouraged to study practical sciences or economic problems. The officials who controlled the trade of Canton were drawn from these two classes, and the officer actually most concerned, the Hoppo, was always a Manchu of low rank, who owed his position to the patronage of a Court noble, a patronage which needed to be nourished by a constant stream of silver.*

The Hoppo was, of course, theoretically a subordinate official, ranking well below the Kuang Chou Fu, or Governor of Canton City, and the Viceroy of the two Kuang provinces (Kuangtung and Kuangsi), who was one of the highest officials in the imperial service. These provincial officials, who were more often Chinese than Manchus, were concerned with many matters besides the foreign trade of Canton, and in spite of their high rank, often lacked the occult Court influence from which the Hoppo drew his strength In the eyes of his masters, and of himself, the functions of the Hoppo were indeed little more than undisguised extortion of the maximum sums the trade could afford to pay. Appointed for three years, the Hoppo had to satisfy his patrons, his rivals for their favour, buy off his enemies at Court, make his own fortune and that of his family, and satisfy the horde of retainers who had accompanied him to Canton. Under these circumstances economic problems and plans to improve the conditions of trade were not uppermost in the mind of this official

It is illuminating to compare the Manchu attitude to foreign trade and intercourse, as exemplified by the nature of the Hoppo's functions and character, with the attitude of the Sung dynasty. In the early 12th century the precisely equivalent office had been filled by such scholars as Chao Ju-kua, a scion of the ruling imperial family, who had devoted his spare time to compiling a book on the geography of the outside world and the customs of foreign nations (p. 423).

*The "Hoppo" was the foreign name for this official, a corruption of the Cantonese abbreviation *Hoi Po*, of the Mandarin title of this official, *Yueh Hai Kuan Pu*—Superintendent of the South Sea Customs.

The nature of the Canton trade facilitated the extortionate methods of the Hoppo and his employers. The balance of trade was entirely in favour of China Tea and silk were exported in ever-increasing quantities, for China then supplied the needs of all Europe as well as of America, and these commodities were paid for in silver. Constant attempts were made to find some product of Europe which would find a sale in the Chinese Empire, but for very many years they met with no success The English East India Company, forced by the terms of its charter to export a certain proportion of English woollens and cloth, found that in China these goods never fetched a price high enough to cover the cost of freight and production. It was not until 1827 that Manchester goods were for the first time sold in China at a profit. Towards the end of the 18th century the foreigners found a market for furs and sandal wood, the first brought from Canada, and the second from the South Sea Islands, but these minor imports were very far from balancing the export staples of the trade, tea and silk.

The Manchu Court regarded the economic self-sufficiency of their empire with complacency. The "outer barbarians" were supplied with tea and silk, and paid a steady stream of silver into the Empire in return. This made taxation, extortion, and corruption easy and profitable. On the other hand, as long as this continued to be the case, the Hoppo, though vexatious to the merchants, never became wholly intolerable. A threat to stop the trade altogether would always lead to a compromise. It was only when the foreign importers discovered an article in keen demand in China, opium, that the officials, finding their source of revenue drying up, adopted measures which precipitated an open conflict This, however, did not occur until nearly half way through the 19th century. In the 18th century the Chinese needed nothing which the European could import. The Emperor Ch'ien Lung was stating facts when, in reply to the embassy of Lord Macartney, he said,

"The Celestial Empire possesses all things in prolific abundance and lacks no product within its borders. There is

therefore no need to import the manufactures of outside barbarians in exchange for our own products."*

This was true enough as far as it went, but Ch'ien Lung ignored a vital consideration. Neither the Emperor nor any other influential Manchu or Chinese knew or cared to know anything about these distant European nations "dwelling at the ends of the sea." They disregarded the science and culture of the western world as unworthy of a scholar's attention Clocks and watches imported from France did indeed make welcome presents to high officials and princes, but no one troubled to inquire why it was that the barbarians made such ingenious toys, nor why they could make them better than Chinese craftsmen. Not even the palpable fact that the size and seaworthiness of the foreign ships had immeasurably improved since the Portuguese first came to Canton seems to have impressed the official world with any realisation of the fact that China was falling behind Completely dominated by Confucian pedantry the official world of the Manchu Empire closed its mind to all other knowledge and refused to believe anything valuable could possibly be learnt from foreigners.

In the T'ang dynasty Ch'ien Lung's attitude would have been irreproachable, for then China had indeed nothing to learn from any other people Yet an attitude of lofty aloofness had not characterised the T'ang rulers. They had been keenly interested in foreign peoples and their products. The Manchus, on the other hand, not only despised and ignored the civilisation of the west, but forced their subjects to remain in a like ignorance. The trade at Canton was hemmed about with innumerable restrictions designed to reduce the contact of foreigners and Chinese to the minimum, and to confine it strictly to the business of buying and selling

The origin of much of this suspicion and of many of these restrictions was no doubt the violence and aggressive behaviour of the early Portuguese navigators and their imitators of other

*Mandate of Ch'ien Lung to George III on the occasion of Lord Macartney's embassy. Translated in full in *Annals and Memoirs of the Court of Peking* Backhouse & Bland. 1914.

nationalities; but the Manchu government proved quite unable, or unwilling, to recognise that the character of the foreign merchants had changed The semi-piratical adventurers of the 16th century were now replaced by the cultivated representatives of the great European monopolistic companies, men who were often connected with the ruling classes in their own country Nevertheless the Manchu government continued to treat them as buccaneers who had to be kept under the closest surveillance.

Restrictions of a kind were necessary, and freely admitted by the foreign traders. For if the supercargoes and captains who conducted the trade were men of education and refinement, the sailors who manned the foreign ships were on the contrary a turbulent and quarrelsome type drawn from the waterfront of many European ports After a long voyage, sometimes six months at sea, the seamen were hard to restrain in port. Homicides, drunken affrays, riots and quarrels disturbed the peace of Canton, and afforded a constant source of anxiety to the supercargoes and to the Chinese merchants, upon whom the official world visited its displeasure on these occasions.

It was to the interest of both parties that the lawless sailors and ignorant mob of Canton be kept apart, but the sailors who wanted distraction, and the hawkers who sold them strong drink and procured them other diversions, had just as strong an interest in the opposite sense. The fact that the European nations were not infrequently at war with one another, and that the neutrality of the port of Canton was not always strictly respected by zealous sea captains, did not make the difficulties of the merchants of both races any the less. Whether a sailor had killed a coolie in a drunken fury, or the rival seamen of England and France had come to blows, the Chinese merchants had to foot the bill, and the officials of Canton saw that it was paid in full.

The European supercargoes suffered in other ways. The riotous conduct of the seamen gave the officials an excuse to enforce irksome restrictions on all foreigners, no matter what their status. Foreign merchants were confined to their factories on the Canton waterfront, and were not allowed to enter the city, or even to take exercise in the country adjacent except under strict limitations At the end of the summer, when the ships sailed, the

traders were forced to leave Canton and spend the winter at Macao No foreign women were allowed to come to Canton, and foreigners were even refused permission to ride in sedan chairs. A prohibition against employing Chinese servants also existed, and, though ignored in practice, was occasionally revived when the official world desired to put pressure on the foreigners. It was strictly forbidden to learn the Chinese language, and Chinese who taught it were liable to very severe penalties Nevertheless, some foreigners did succeed in becoming proficient scholars, and this prohibition tended to become a dead letter in later years.

The natives of Canton suffered almost as many disabilities in their relations with the foreigners All trade was confined to a handful of merchants, known as the Hong Merchants, who rarely numbered more than ten firms, and sometimes were as few as five or six. For their privilege they paid great sums, were not allowed to retire from the trade without paying a huge ransom, were forced to hold themselves responsible for the acts of the foreigners, and were mulcted at every turn by the Hoppo and other officials. Many of these merchants were forced into bankruptcy by excessive extortion, and when this happened they were stripped of their last copper and exiled to Central Asia In time the terrible privilege of being a Hong Merchant was shunned by all, and new recruits had to be forced to assume the unwelcome honour.

Every endeavour of the government was directed to preventing their subjects from acquiring any knowledge of the foreigners' culture or civilisation Conversion to Christianity was forbidden. Emigration, or even travel on foreign ships was a crime. As foreigners were forbidden to learn Cantonese (which of course was a dialect unintelligible to Manchus and Chinese officials from other provinces) the trade had to be carried on in Pidgin English, that curious language, composed of English and Portuguese words, often used in a sense unknown to their native lands, and strung together according to Cantonese grammatical forms The true Pidgin English, now an extinct language, was equally unintelligible to a native of Canton or to a foreigner who had not studied its peculiar vocabulary

With all these difficulties to contend with, both the Hong

Merchants and the foreigners made huge profits out of the trade. Year by year the volume of trade and the number of ships engaged in it increased In spite of the enormous drain of bribery, extortion and legitimate taxation Canton grew rich, and the producing provinces shared in its prosperity. The incubus of the Manchu government battened on the trade, but could not kill it, and the extortions to which they were exposed brought home to the Cantonese a full realisation of the wasteful burden of the imperial system which they supported without getting any return for their money.

During the 18th century the foreign trade with China was conducted exclusively by the monopolist East India Companies organised by the various maritime nations. The English Company, on account of its sovereign position in India and the naval supremacy of the English in the eastern seas, soon became the dominant partner in the China trade. The rival companies, French, Dutch, Danish and Swedish, declined in importance until the Napoleonic wars, which swept the shipping of these nations off the seas, destroyed their trade with the east, and left the English almost the only nation trading with China. Their monopoly would have been complete had not the newly established United States entered into competition. The Americans did not form an East India Company, but opened the trade of China to all who cared to undertake the business

The difference in the status of the English and American traders, the first the representatives of a great monopolist Company, the second free lance traders acting for their own account, was reflected in a marked difference of attitude on the part of the two nations towards the Manchu government and its pretensions. The Americans in Canton were not under the control of any authorised body of their fellow-citizens, such as the Select Committee of Supercargoes which had a statutory authority over all English subjects in Canton, and was empowered to deport persons who came to China without the licence of the East India Company. The Americans appointed a consul, but his authority was not effective over his own countrymen nor respected by the Chinese officials. The English supercargoes had for many years resisted the Chinese claim to try to punish English sailors for

homicide. They had successfully established a custom—unsanctioned by Chinese recognition—but permitted in practice, of having such cases investigated in the English factory in the presence of the supercargoes as well as the Chinese officials, and of deporting the culprit to England if found guilty. Such incidents indeed invariably led to a tiresome dispute with the Chinese officials, and were only settled by liberal bribes paid by the Hong Merchant who "secured" (guaranteed) the English ship to which the guilty party belonged. Nevertheless the English had established as a general practice the immunity of their countrymen from the drastic and cruel punishments of the Chinese penal code.

The Americans, being a disunited body of independent traders, had no governing authority to defend their common interests. Each ship, if involved in a dispute of this nature, escaped from its difficulties by a compromise which often ended in a victory for the officials of Canton. American sailors who committed homicide, though the case might amount to no more than manslaughter, were seized by the Chinese authorities and executed on the public execution ground outside the city walls. The English greatly resented this compliance, which they feared would weaken their own position.

The attitude of the two nations was quite at variance and has remained so to this day To the Americans, the troubles and adventures which befell a citizen who went trading to strange lands were his business, and were not considered to be the concern of the nation as a whole or of the government The "frontier" point of view, which expected every pioneer, whether on land or sea, to conduct his business with a sturdy independence of official aid, prevailed. Moreover, the American traders in China were isolated individuals representing no great vested interest, and having no powerful influence in Congress.

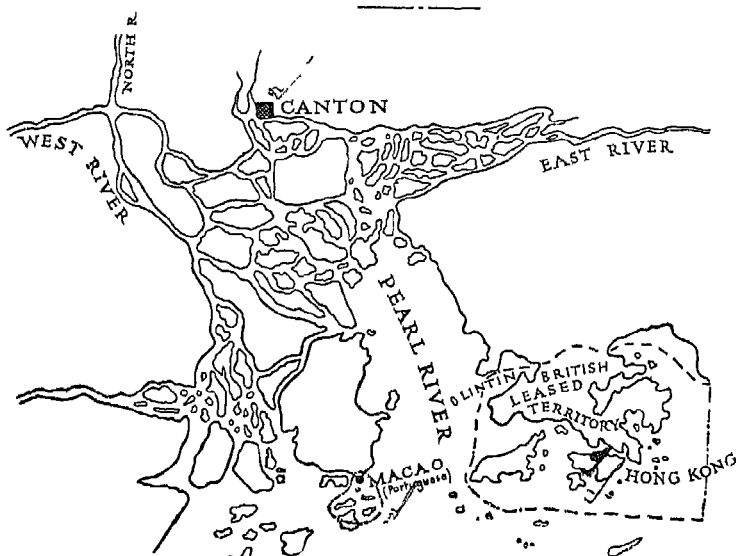
The English, on the other hand, saw these matters from a wholly different angle. To them the English Company in China was the representative of the English King and nation, and should be treated as such By the end of the 18th century the East India Company was exercising sovereign power over a very great part of India, it was administered by men of great political and

social influence in the English government, and the supercargoes in Canton were usually close relatives of this new Anglo-Indian aristocracy. Men whose brothers and cousins wielded the power of princes in India were treated in Canton as if they were dangerous pirates temporarily posing as honest traders. They suffered under degrading restrictions and experienced humiliating treatment at the hands of a government which was obviously as weak as the Indian kingdoms which had succumbed to the East India Company. This "Indian" outlook which pervaded the English in Canton was a psychological factor of importance in the Canton situation, and one which helped to make an armed conflict inevitable.

The changed circumstances of the English traders in China, who had been unsupported adventurers from a distant island, and were now the representatives of a conquering imperialist power, made no difference to the Chinese attitude towards them. The Manchu government was apparently unaware, or indifferent, to the development of English power in the east India was not far away, but China learnt nothing from the fate of Bengal. The obvious fact that English sea power had driven the French and the Dutch off the ocean made no impression. The Manchu government did not either build a fleet of seagoing warships, or even make any serious attempt to suppress the pirate fleets which sheltered in every bay of the deeply indented south China coast When the pirates grew so strong that they menaced the city of Canton itself, negotiations were opened, and the pirate admiral was finally pardoned and invested with a commission in the imperial service. The English were well aware of the growing weakness of the Manchu government, and if they refrained in China from adopting the forceful methods which had won them an empire in India, it was more on account of the Napoleonic wars, than from any doubt as to the outcome of a conflict.

Opium was the ostensible cause of the rupture when it came, in 1841, but though there were Chinese and Manchu officials who really deplored and feared the spread of the opium habit, it was not solely on this account that the Manchu government finally took violent action against the opium importers, and so

precipitated the long delayed war It was a recognised fact that the importation of opium into the empire had been prohibited for many years Decrees reiterating the prohibition had often been published. The English East India Company had always forbidden the import of opium in their ships, and had carefully enforced this order. Yet opium had been freely imported first at Macao, later at Lintin, a point in the Canton estuary (Pearl River) (Map 18) for more than half a century. It was grown in India,

THE CANTON ESTUARY

MAP 18. *The Canton Estuary.*

largely for the Chinese market, and shipped at first on Portuguese or Parsee vessels, later in English ships registered in Indian ports, which by a legal fiction were not regarded as "Company ships" though all Indian commerce was under the authority of the Company, the sovereign power. The trade was important to the Company and served to finance the China investment.

The Chinese officials at Canton, for their part, connived at the trade as openly as the government of India. The decrees from

Peking were a dead letter in Canton. Every official drew his regular revenue of bribes from the opium dealers, and none profited so handsomely as the preventive forces charged with the suppression of the traffic From 1782 onwards the trade steadily increased. By 1823, 6000 chests were annually landed at Lintin. Two years later it is stated that the trade had doubled in ten years; and by 1832 20,000 chests were imported each year. The opium traffic on the coasts had attained the same proportions as the traffic in the west of China at the present time, and was just as difficult to suppress *

Modern students of this problem are not likely to endorse the intemperate language in which 19th century writers condemned the opium trade and the corrupt connivance of the Chinese administration. The Prohibition experiment in the U.S A. has shown how impossible it is for a government, however strong, to suppress a social habit which has become generally accepted, and which is not condemned by the opinion of the majority. The evil effects of opium smoking in excess are no doubt as profound as the prohibitionists claim; but not one in a thousand smokers experiences them, for opium sots in China are as rare as dipsomaniacs among ourselves Public opinion refused to condemn a habit which appeared to the ordinary observer to be socially harmless.

Consequently the contraband trade expanded rapidly. The Chinese officials, dealers, and retailers of the drug made large profits, while the foreign traders had at last discovered a foreign product for which there was a keen demand in the Chinese Empire. It was this fact, rather than the moral objections to opium, which were only felt by a minority, that roused the Manchu government As the opium imports grew, the flow of foreign silver into China diminished. Moreover, opium was contraband. It was not passed through the customs and paid no taxes. The fact that the trade supported an immense burden of illegal extortions, did not benefit the imperial treasury. The officials at Canton therefore found their opportunities for personal enrichment decreasing, while at the same time it became more difficult to satisfy the rapacious demands of the Court. The decline in

*_The East India Company Trading To China._ H B Morse. Oxford 1926 Vol iv

revenue was regarded as a crime for which the Canton officials were in some way responsible.

The demands of the Court, the perplexities of the officials at Canton, and the growing impatience of the English traders made a situation which needed little aggravation to become insoluble by peaceful means. The attempts to suppress the opium traffic upset the precarious peace at Canton. Force was met by force, and the two nations drifted into a war which brought the Canton monopoly to an end and inaugurated a new economic era, that of the Treaty Ports and the system of extra-territorial jurisdiction.

For rather over two centuries the sea-borne trade of China had been conducted through the single port of Canton, yet, in spite of this restriction, and the hampering limitations which were imposed on the merchants both Chinese and foreign, the Canton trade had effected far-reaching changes in the economic life of the empire. Enormous wealth—for that age—came to Canton, and was distributed throughout the producing provinces of the south, and at the capital. In 1805 the value of the trade as computed by the East India Company was over six and a half million sterling, and the quantity of silver imported to Canton exceeded four and a half million dollars, but the revenue of the Chinese government (apart from official peculations and extortions) did not amount to more than 1,300,000 taels, or somewhat over £400,000. Individual Hong Merchants accumulated vast fortunes, even though they had to make constant heavy payments to the officials and to the Court. The merchant known to the English as Howqua, but whose correct name in Chinese was Wu Tun-yuan, was probably one of the richest men in the world at that time In 1834 he himself estimated his fortune as over £6,000,000.

The sea-borne trade with Europe thus completed an economic change which had been in progress since the T'ang dynasty—the rise of the south and the decay of the north-west. From the reign of Ch'ien Lung onwards the south, and in particular the Yangtze delta and the tea-producing districts along the coast, became by far the wealthiest and most populous part of the empire, the centre of trade and industry, the focus of economic life. The fatal consequences to the dynasty itself of this

concentration of wealth and population in the region most antagonistic to Manchu rule have already been indicated. Another consequence was longer in becoming apparent. The areas which became enriched by foreign trade were also those in which foreign ideas made the most rapid progress. The economic revolution in the south preceded and was the major cause of the great complex movement which is still in progress: the Chinese revolution and the cultural changes associated with it.

Chapter XXIX

T'AI P'ING CHRISTIANITY

"THREE ways to one goal" was a phrase commonly used in China to explain the fact, disconcerting to the European, that most Chinese practised the rites and revered the divinities of Buddhism, Taoism and Confucianism, without being disturbed by the knowledge that these theologies are often mutually contradictory. The average westerner, conditioned by a culture which admits only one true religion, finds such an attitude almost unintelligible. It seems to him, either that the Chinese are hypocrites who believe in nothing, or else that they must be entirely lacking in that essential quality of "faith" which to the western mind absolutely excludes the possibility of holding two religions to be equally valid.

It can hardly be denied that the Chinese Confucian scholar who condemned Buddhism and Taoism as "superstition" in his writings, but invoked Buddhist priests for the celebration of marriages, the conduct of funerals, and in times of sickness, was guilty of inconsistency, or at least of yielding to the prejudices of the unlearned and the conventions of ordinary society But it must be remembered that in China there had never been a jealous God, who denied the existence of his rivals. The Buddhists admitted the godhead of the Hindu deities, though they treated them as inferior to the Buddha, and even to the great Bodhisattvas. The Taoists, equally, were always ready to acknowledge any deity who commanded a popular following, and to accord him a place in their pantheon. Confucius had never pronounced himself in favour of, or in opposition to, any deity, largely because in his age there was no religious conflict and the traditional rites were unquestioned. Therefore, "three ways to one goal"—the goal being a righteous life—seemed a very reasonable outlook to the Chinese. The scholar followed Confucius, the contemplative recluse sought Buddha in the mountain monasteries, the simple and ignorant populace worshipped the Taoist Queen of Heaven, and a multitude of other divinities, to avert calamity. A

contemporary Chinese scholar has summed up this situation· "In China the educated classes believe in nothing, the uneducated class in everything."

By the 19th century the educated class had indeed lost all faith in Buddhism and Taoism The priests of both religions were despised as mountebanks, and were the butt of stage plays and novels. Yet the government, with an eye to popular feeling, felt it necessary to protect and even patronise these decaying faiths Buddhist and Taoist temples were repaired and enriched by the essentially Confucian Manchu Emperors. The Manchus, conservative in everything, were not willing to break with religions which might command popular support They were also well aware that Confucianism, never a true religion, was limited in its appeal. The mass of the people, being illiterate, had never been able to read the classics, or to understand the ancient language in which they were written. For them the rites of Confucianism were matters for officials and scholars, the province of the government, to be respected, but not shared, by the populace.

Yet the two popular religions, Buddhism and Taoism, were rapidly losing their hold on the people themselves. Buddhism by the 19th century meant Amidism, the worship of Amidabha Buddha and the hope of entry into his Western Paradise at death To achieve this end it was only necessary to believe in Amida (the shortened name of Amidabha) and call upon his name. The invocation of the sacred name was in itself sufficient to ensure rebirth in paradise, and the more often the invocation was made, the more certain was salvation. One consequence of this simplification was the decay of the essentially Buddhist virtues. The average "Buddhist" Chinese ate meat, drank wine, slaughtered animals, and on occasion, as a soldier, or in a village clan fight, took human life, but did not fear that these radical violations of the original Buddhist commandments would endanger his chances of paradise. It may be that the prevailing contempt for the military profession, and the low social position of butchers were consequences of Buddhist teaching, but apart from this the "eightfold path" had ceased to exercise any detectable influence on morals and customs

True Buddhists did indeed still exist. In the great mountain monasteries, far from the corruption of daily life and city manners, at Chiu Hua Shan in southern Anhui, P'u To Shan in the Chusan Islands, and at other famous Buddhist shrines in different parts of the empire, the old rules and the pure theology still held fast The very remoteness of these strongholds of the faith, the contemplative temperament of the monks who dwelt in them, and their detachment from the life of the people in general, contributed to the decay of the faith in the thousands of villages and small cities in which 90 per cent of the population of China live. Buddhism had failed to dethrone Confucius in the schools and the examination hall, and so played little part in the lives of the rulers of the empire It had also failed to drive Taoism and its myriad gods out of the peasant villages, and so could not claim to be the sole source of moral guidance for the mass of the people. It remained the refuge of the world-weary and the contemplative natures who found the pressure of family life in the Chinese social system intolerable

Taoism, although it was still one of the "three ways," had lost sight of the goal. Among all classes the Taoist priest was despised and disliked, but by the peasantry he was still feared. Derided by the educated as a gross superstition, fit only for the "stupid people," Taoism still flourished as a system of magic, and Taoist priests still found a ready market for their spells and charms, designed to bring rain, or avert disease. The close association between Taoism and the false sciences of astrology, quack medicine, fortune telling and alchemy was one potent cause of the contempt felt by Chinese scholars for all branches of learning not orthodox and literary. Chemistry, physics and all sciences dealing with the material world were suspect These were the fields in which the Taoist priest, ignorant and dishonest as he usually was, flourished For a scholar to take an interest in such matters was a serious breach of "good form." The fact that numerous popular movements hostile to authority took their origin from some Taoist sect which by mystic rites promised immunity in battle to its devotees contributed not a little to this attitude of distrust and neglect

with which medicine and chemical experiment was generally regarded.*

The three religions of China, as they are often called, were in decay, but these three religions were in fact growths which existed independently of the fundamental religion of the Chinese people, which had long preceded them, and which will no doubt long survive their disappearance; ancestor worship, the cult of the dead, remained the one creed to which all Chinese paid reverence, which was so firmly established that it was accepted without question by all classes, and in consequence had no need of state-maintained temples or priests

The fact that Buddhist theology ignores, and by implication opposes, the cult of the dead, and that this cult is and has always been the moral foundation of Chinese society, is striking testimony both to the failure of the Indian religion in its effort to convert the Chinese, and of the unshakeable hold that the most ancient of all religions has obtained on the Chinese mind. Confucius has been deposed by the republicans—his close association with the Manchu dynasty and the imperial system made this inevitable—Taoism is in process of dissolution, Buddhism either stationary or declining. The Cult of the Dead survives, if not openly acknowledged, yet implicitly recognised. The first act of the revolutionary party when they regained power and formed a government in Nanking in 1927 was to spend six million sterling on the mausoleum of their dead leader, Sun Yat-sen. Ceremonies to his memory are now the only religious rites obligatory upon officials and compulsory in schools.

Although the details of the ceremonies connected with ancestor worship have been modified by time and the influence of other ideas, the continuity of the cult in its principal features has been unbroken. The rites performed in the clan ancestral temple, the

*The Boxers, who after initiation believed themselves to be invulnerable, are the best known of these sects But the Society of the Harmonious Fist, as they were correctly styled, had an ancient descent, and have had successors in recent years In Shantung, where the Boxers arose, and where their successors, the Red Spears, Heavenly Gates and Big Swords, have flourished, the connection between these sects and Taoism is generally admitted Indeed, it is claimed that all these sects descend from the Yellow Turbans of the Han dynasty, who were founded by an itinerant priest doctor in a time of pestilence (chapter XI).

care of graves, the duty of furnishing the ancestors with male posterity capable of carrying on the rites, with its corollary, the subordination of the individual to the control of the family group, these essentials were as universally accepted in the 19th century as they had been in the first millenium before Christ. The ancient fertility cult of the grain and the soil with its imperial offshoot, the worship of Heaven by the Emperor—the Son of Heaven—continued unchanged. In its official aspects this cult had become identified with Confucianism, for the Sage had enjoined the maintenance of these ancient rites, but among the people the worship of the T'u Ti, the local god of the soil, had nothing to do with Confucius or the official cult. It was the traditional and natural religion of peasant farmers wholly dependent on the yield of their small farms and the clemency of the elements With the fall of the Manchu dynasty the official worship at the temples of the grain god and at the temple of Heaven in Peking came to an end, and the grounds of these shrines of the ancient cult became public parks, but in every field of the myriad farms of China the T'u Ti has his mud shrine, and still receives the traditional offerings of the cultivators.

The decay of the organised religions, Buddhism and Taoism, and the close identification of the official Confucian cult with the alien Manchu dynasty opened the way for a true religious revolution which at one moment promised to sweep the Chinese Empire and replace the older faiths. The T'ai P'ing movement, usually ignored in its religious aspects, was primarily a religious revival, and only secondarily a revolt against the Manchus. It is a curious fact that this movement, a product of the new contact with European civilisation, and the most positive consequence of Christian missionary enterprise, has been ignored by the missionaries themselves, and was finally destroyed by the armed intervention of the Christian Powers. In European histories of China the political character of the T'ai P'ing rebellion is emphasised, and the religious side is either misrepresented or derided. Yet to the T'ai P'ing leaders themselves it was their faith which mattered even more than victory over the Manchus. Had they abandoned their religious convictions and directed their efforts to raising a national revolt their success would have been assured.

The T'ai P'ing rebellion was the most formidable which the Manchu dynasty ever encountered, for the triumph of the republican movement in 1911 was due more to the internal collapse of the dynasty than to the armed forces of the rebels; the dynasty fell because no one could be found to fight in its defence The T'ai P'ing movement, on the other hand, involved the whole Chinese Empire in a thirteen-year war which devastated the central provinces and exhausted the power of the Manchu dynasty. Its defeat was largely due to foreign intervention on behalf of the Manchus, intervention decided upon in the interests of European traders and with a view to an imperialist programme of partition and spheres of influence The Manchus were preserved because they were weak and defenceless, the T'ai P'ings opposed because their victory would have made China strong and independent

The T'ai P'ing movement was founded by Hung Hsiu-ch'uan, a Cantonese of the educated class who had failed to pass the civil service examinations He certainly believed, probably with justice, that this failure was the result of prejudice on account of his southern origin and the fact that his clan had played a rather conspicuous part in the resistance to the Manchu conquest one hundred and fifty years before Hung was thus typical of a large class of discontented scholars who laboured under a sense of injustice and harboured resentment against the Manchu government. In 1837 Hung Hsiu-ch'uan had a serious illness, during which he experienced visions—or as his enemies said, hallucinations—which he later believed constituted a divine revelation. Some years after he found a short tract which contained a part of the Christian Gospel translated into Chinese, the work of the recently established Protestant missionaries at Canton On reading this Hung was convinced that the doctrine expounded in it corresponded to the revelation which he had received during his illness, the meaning of which had so far eluded him. He immediately adopted the doctrine found in the tract, which he believed to be confirmed by his visions, and he henceforward devoted his life to the propagation of this new religion.

This religion can only be described as a form of Christianity,

though owing to the incomplete nature of the Christian tract which inspired Hung Hsiu-ch'uan, certain important doctrines of Protestant theology were misunderstood or unknown to the T'ai P'ing creed The very fact that the prophet of the new religion was a Chinese * though his faith was largely of foreign origin, made for the success of the movement among his own country-men, and called down the condemnation of and eventually aroused the fierce hostility of the majority of Christian missionaries. The success of the T'ai P'ing leader was extraordinary. After some years of missionary work among his own clan and the Hakka people to which it belonged, Hung's movement came under the hostile attention of the officials of the province. Orders were given for the arrest of the leader and the suppression of the Society of God Worshippers, as the T'ai P'ings were then called Up to this point the movement had been purely religious, but as it condemned the practise of all existing religions, and denounced Buddhism as idolatry, the Manchu government regarded it as a subversive agitation, tending to cause disorder.

The followers of Hung Hsiu-ch'uan resisted the government proscription and took up arms. They were at once victorious over the provincial troops, capturing the small city of Yung An in Kuangsi province, which had now become the centre of their movement. Here, in 1851, Hung Hsiu-ch'uan proclaimed the T'ai P'ing T'ien Kuo, or Great Peaceful Heavenly Dynasty, and himself took the title T'ien Wang, or Heavenly King. He deliberately avoided the title of Emperor, Huang Ti, because the word *ti*, usually translated as Emperor, formed part of the expression Shang Ti, Emperor on High, which the T'ai P'ings in common with all Chinese Christians have used to translate the term God. It is noteworthy that in this point Hung was returning to a very ancient Chinese usage, for the term *ti* had been an appellation of divinity until Ch'in Shih Huang Ti for the first time used this divine title to express his own supreme royalty (Chapter VI).

*Hung Hsiu-ch'uan was himself a Hakka. The fact may well have been one cause of the eventual failure of his movement. In Kuangtung considerable hostility exists between the two sections of the population, and political movements associated with one or other rarely receive the support of the rival group. The T'ai P'ing movement was not supported by the rest of the population, nor by the great secret societies of Canton

Following the capture of Yung An the T'ai P'ing army, swollen by recruits, marched northward across Hunan to the Yangtze, capturing every city in its path except Chang Sha, which successfully withstood them. Reaching the river at Yo Chou, which he captured, Hung Hsiu-ch'uan marched east, and following the course of the Yangtze captured Nanking, the southern capital of the empire, on 8th March, 1853, after taking all the cities along the Yangtze valley which he passed. Against this formidable rebellion the provincial troops of the Manchu government proved worthless If Hung Hsiu-ch'uan had continued his march northward after the fall of Nanking it is almost certain that he would have driven the Manchus out of China in less than a year. Unfortunately for China he did not follow this plan. Settling down in Nanking, which he renamed T'ien Ching, the Heavenly Capital, he set about organising his theocracy, merely despatching small armies to spread the faith and expel the Manchus. One of these forces, only 7,000 strong, marched across North China from Nanking to the border of Shensi, and then eastward to Ching Hai 20 miles south of Tientsin There, lacking reinforcements the commander, Li Hsin-chêng, styled the Chung Wang (Prince Faithful), the ablest and most forceful personality in the T'ai P'ing ranks, halted, and was later compelled to fall back to the Yangtze valley This force, if properly supported, would have had no difficulty in capturing Peking itself, where panic had paralysed the Manchu Court.

Hung Hsiu-ch'uan had expected a general rising in the north, or at best a great increase in his following, but he was disappointed. The northern expedition received no recruits on its march. The reasons for this apathy were ignored by the T'ai P'ing King His army was composed of southerners, very largely Kuangsi Hakkas, whose dialect was unknown to the northerners. The T'ai P'ing army, small and almost foreign, did not arouse confidence in the northern Chinese, who were in any case closer to the seat of government, and more in awe of its power. A great invasion would have shown promise of driving the Manchus out of China, but a raid by seven thousand Kuangsi Hakkas seemed a desperate gamble to the anti-Manchu elements in North China. Secondly, the T'ai P'ing religion, Christianity in fact,

was strange and not very welcome to the mass of the nation The destruction of Buddhist and Taoist temples, which the T'ai P'ings made their first duty on taking a town or village, roused hostility. The substitution of unknown Christian gospels for the time-honoured Confucian classics at once alienated many of the educated class The north was not at first hostile, but it was neutral, almost indifferent, exactly as, sixty years later, the northern provinces failed to respond to the republican revolution which began in the Yangtze valley

In a short chapter it is impossible to enter into a detailed account of the T'ai P'ing war in the years that followed the failure of the Chung Wang's expedition to the north. The Manchus, rallying in the north, made many unsuccessful attempts to drive the T'ai P'ings out of the Yangtze valley, the area which they had most thoroughly conquered, but until the foreign Powers came to the assistance of the Manchus these campaigns were fruitless. Indeed during these years the T'ai P'ing armies extended their authority over the whole of the Lower Yangtze provinces, and also penetrated into Szechuan, Hupei, Hunan and Honan The T'ai P'ing dynasty had every prospect of ultimate victory, and seemed firmly established in the south until foreign intervention on their coasts opened the way for a Manchu re-conquest

The alliance between the British and French Governments and the Manchus against the T'ai P'ing rebellion is one of the most remarkable, and certainly the most discreditable, episode in the history of Sino-European relations Every consideration of sentiment and even of self-interest, if a long view were taken, pointed to an opposite policy. The T'ai P'ings were not only Christians, if unorthodox ones, but were most friendly to foreigners and very anxious to obtain their friendship in return. The evidence of every foreigner who visited Nanking or other T'ai P'ing possessions, confirms the fact that the T'ai P'ings regarded foreigners as co-religionists, and also as allies, for the foreign Powers had made war on the Manchus in 1841, and did so again in 1859-60 —during the T'ai P'ing rebellion itself Not only were the T'ai P'ing leaders anxious to spread Christianity, and to assist the missionaries in this task, but they proposed to open the whole

Chinese Empire to the trade of foreigners, who might travel and reside where they pleased. Under the treaty wrung by force from the Manchu Government, foreign trade was restricted to a few ports, and the residence of foreigners confined to these places, while rights of travel and missionary work were constantly hampered by every sort of official interference.

Whatever may be thought of the T'ai Ping form of Christianity, and the destruction of temples and persecution of Buddhists which accompanied their progress, the evidence of those foreign observers who lived among or visited the T'ai P'ings shows that the movement had effected a great revival of the national character and self-respect "The T'ai P'ings are practically a different race to the imperialist Chinese" is an expression constantly used, not only by missionaries sympathetic to their cause but by naval officers and merchants. It was remarked that the T'ai P'ing soldiers neither pillaged nor pilfered. The devastation in the war area was due to the atrocious reprisals inflicted by the imperial troops on rebel districts The social reforms which the T'ai P'ings inaugurated are remarkable Foot binding and opium were forbidden, the position of women was greatly improved, and some were even employed in an official capacity. Taxation in the T'ai P'ing kingdom was very much lighter than in the Manchu Empire, and more equitably adjusted.

During the early years of the T'ai P'ing movement the opinion of foreigners in China was entirely favourable to the rebels The Anglican Bishop of Victoria (Hong Kong) frequently asserted his entire conviction that the T'ai P'ing movement was a Christian crusade, if perhaps unorthodox and ill-instructed in certain doctrines. This attitude altered in 1860 when the British and French Governments concluded a treaty with the Manchu Emperor which they deemed highly advantageous to themselves.

Although certain missionaries and a large number of lay foreigners in China deplored the policy of their government, their opinions were not heeded, and are now only recorded in long forgotten books and newspaper articles. It became customary to misrepresent the T'ai P'ing creed as a gross superstition composed of blasphemous distortions of Christian doctrine. In this way the embarrassing fact that armed forces of the British

Crown were engaged in suppressing a national and Christian rising for the benefit of the admittedly pagan, corrupt and untrustworthy Manchus could be condoned by missionaries and statesmen. China was very far away in the 'sixties, and such propaganda had an easy victory

In essentials the T'ai P'ing creed was Protestant Christianity. The T'ai P'ings possessed the complete Bible, as translated into Chinese by Dr. Gutzlaff, an early Protestant missionary. This Bible they printed extensively in Nanking, and distributed free to their supporters and converts. In matters of dogma, though not quite orthodox in some particulars, they held the main tenets of Christian theology. They acknowledged only one deity, Shang Ti, God Almighty. Jesus occupied in T'ai P'ing theology a position almost identical with that upheld by European Protestants, but the doctrine of the Trinity was not clearly understood by the T'ai P'ings owing to the imperfections of their translations. The Holy Spirit was acknowledged, but it was believed by them that at certain times the Holy Spirit had descended and possessed one of their leaders, the Tung Wang, Yang Sui-ch'uan.

The Ten Commandments were the foundation of their creed and were the first thing every convert, and every child, was taught The T'ai P'ings had also acquired that distinctive characteristic of Christianity, and other Judaic religions, intolerance. They admitted no other deity but the Christian God. Buddhism and Taoism were accursed superstitions to be rooted up, their temples destroyed, and their monks secularised. Had the T'ai P'ing movement triumphed, whatever else it might have accomplished for China, it is certain that it would have destroyed these ancient faiths as completely as Islam destroyed the Buddhism of north-western India, and of the East Indies. This would have been something of a calamity for the arts and architecture of the past, but hardly one which would have troubled the consciences of the foreign missionaries in China at that time. The destruction in 1860 of the Summer Palace (Yuan Ming Yuan), near Peking, with its priceless art treasures, was considered to be a reasonable and moderate reprisal for the ill-treatment of British envoys by the Manchu Court. Chinese art and culture was a sealed book to the European nations

The real ground for missionary opposition to the T'ai P'ing movement was the position and authority of the leader, the Heavenly King, Hung Hsiu-ch'uan himself. The T'ai P'ing Christian movement was the outcome of this man's inspiration and leadership It was only indirectly the product of missionary endeavour. Hung himself had never received instruction or baptism at the hands of a missionary. His theology was defective in some points, from the Protestant point of view, but to his followers he was not merely a King, but much more a prophet, a man directly inspired by God Himself, who had manifested the truth to Hung Hsiu-ch'uan in a vision. This doctrine was the core and heart of the T'ai P'ing movement They regarded Hung Hsiu-ch'uan, not indeed as divine, but as inspired. Where his doctrine differed from that of the missionaries, the prophet, directly in touch with the Deity by revelation, was obviously right Hung himself was unquestionably a sincere religious devotee who fully believed in his mission. He had been astonishingly successful, and without receiving the slightest assistance from missionaries. To pretend that this prophet and King should seek instruction from foreign missionaries seemed to the T'ai P'ings unreasonable presumption.

Much play was made by anti-T'ai P'ing writers with the title, "Younger Brother of Jesus," which Hung Hsiu-ch'uan assumed It was invariably represented by these critics as a claim to divinity. It is possible that some of the missionaries who found this title so offensive were genuinely ignorant of the sense in which the Chinese words *hsiung ti*, "younger brother," were used by the T'ai P'ings. Others certainly deliberately distorted the meaning for propaganda purposes. The T'ai P'ings used this term for a co-religionist. Foreign Christians were called *wai hsiung ti*, " foreign brothers"—a fraternal greeting which should not have seemed strange to Protestant evangelists who were then coining the phrase, "black brothers" for Christian negroes Hung Hsiu-ch'uan's title, "Younger Brother of Jesus," to his followers meant no more than the Manchu Emperor's title, "Son of Heaven," meant to other Chinese. In neither case was it understood as a literal assertion of divine relationship. T'ai P'ing leaders in conversation explicitly denied that the T'ien Wang was divine. "A man like other men,

but a much greater one" was the phrase used The fact that this title was merely an example of Oriental grandiloquence without literal religious meaning is proved by the account of a visit to Nanking by an anonymous foreigner, who published his impressions in a Shanghai newspaper over the signature XYZ :

> "Whatever Hung Hsiu-ch'uan may mean by calling himself the Brother of Jesus, it is but justice to say that no evidence was found of its being insisted on as an essential article of faith among the mass of his followers Several officers who subsequently visited the steamer, when asked what was meant by it professed themselves unable to give any information upon the subject They were so evidently puzzled that it was plain that their attention had never been called to the matter before."*

In this connection it may be observed that in the picture of the Heavenly King circulated among his followers he is described only as Tien Tê—his reign title, "Celestial Virtue"—not as "Brother of Jesus."† He is shown wearing the five-clawed imperial dragon robe (Fig. 64).

The character of the T'ai P'ing creed, and the points in which it accorded with orthodox Christianity, as well as the claims made on behalf of the Heavenly King, is clearly revealed in a long composition which was called the "Trimetrical Classic," as it was written in sentences of three characters each This was the creed which the T'ai P'ings taught to their converts and children, and it was arranged in this way to make memorising easy. The document is too long to quote in full, but some extracts will suffice to indicate its character It begins with an account of the Old Testament creation story:

> "The Great God
> Made Heaven and Earth
> Both land and sea
> And all things therein
> In six days
> He made the whole."

*Lindley *Ti-Ping Tien Kwoh, the History of the Ti-Ping Revolution* London. 1866 Vol I p 216

†The text figure is taken from Gallery & Yvan *Insurrection in China* 1853.

FIG 64. *Hung Hsiu-ch'uan, the T'ai P'ing Heavenly King.*

The captivity of the Jews in Egypt and their deliverance is then described, with an account of the plagues of Egypt, and the delivery of the Ten Commandments to Moses at Mt Sinai. Owing to the failure of later generations to keep this law·

"The Great God
Out of pity to mankind
Sent His firstborn son
To come down into the world
His name is Jesus
The lord and saviour of men
Who redeems them from sin
By the endurance of extreme misery.
Upon the Cross
They nailed His body
Where He shed His precious blood
To save all mankind"

An account of the Resurrection follows, and then the history of China is traced down to the revelation received by Hung Hsiu-ch'uan himself. In this review the sage kings praised by the Confucians are described as "honouring God," and the decline of true religion is attributed to Ch'in Shih Huang Ti, the Emperor Wu of the Han dynasty, the Emperor Ming of the same dynasty, who introduced Buddhism, and finally, the Sung Emperor Hui Tsung, who patronised Taoism Although this view betrays a Confucian outlook on Chinese history, it is not inconsistent with the Christian approach to the same facts. The Confucian Heaven, or Shang Ti, could easily be identified with God, but the Buddhist and Taoist deities were manifestly opposed to Christian theology It must be remembered that Hung Hsiu-ch'uan had studied the classics as every educated Chinese was bound to do at that time. His revelation is thus described:

> "In the Ting Yu year (1837)
> He was received up into Heaven
> Where the affairs of Heaven
> Were clearly pointed out to him
> The Great God
> Personally instructed him
> Gave him codes and documents
> And communicated to him the true doctrine "

Further revelations are recorded and the creed ends with a series of injunctions to observe the Ten Commandments and worship the true God.

This document and other T'ai P'ing literature was received by Sir George Bonham when he visited Nanking in 1853, and translated by Dr. Medhurst.*

To the missionaries, more concerned with sectarian rectitude than with the broad issue of paganism versus Christianity in some form, this claim was absolutely inadmissible. Christian theology was fixed and determined There was no room for a new prophet, especially when the prophet turned out

*The T'ai P'ing creed is translated in full in *The Insurrection in China* by Callery and Yvan. London. 1853. Supplementary Chapter by J. Oxenford.

to be an unbaptised Chinese. If the Heavenly King had renounced his claim to revelation and inspiration and humbly sought baptism and instruction from some English missionary, the western Christian world would have approved, but the T'ai P'ing movement would have been robbed of its motive and meaning. It might have been supposed that so vast an upheaval, which promised, if successful, to result in the complete conversion of the whole Chinese people to T'ai P'ing Christianity, entitled the leader to be considered a prophet, indeed, to be the most outstanding Christian prophet known to history The English missionaries, however, would have none of him. Christianity, if it came to China, must come through their direct teaching. Direct inspiration to a Chinese was unthinkable, God only acted in Asia through the medium of Europeans.

The opposition of the British and French Governments was not inspired by disapproval of the claims made on behalf of the T'ai P'ing Heavenly King, but on grounds of expediency and trade. In 1859-60 these Powers had made war upon the Manchu Government, moved thereto by the continued obstruction to trade and interference with European merchants, an inevitable consequence of the rooted fear and dislike of foreigners which inspired the rulers of the empire The war ended in a complete victory for the western Powers. Peking was taken, the Emperor fled to Jehol, and the treaty which terminated hostilities accorded the invaders all their demands. Not only were more ports, including those of the Yangtze, opened to trade, and the navigation of the great inland waterway granted to foreigners, but an indemnity was imposed by which the Manchu Government was made to pay the cost of its own defeat. This indemnity was secured upon the customs revenues, the control of which was vested in foreign officers, while the rate at which duties were to be levied was also subject to a limitation determined by the foreign Powers in the interest of their traders. The Manchu Empire had sunk to a position in which its continued existence was dependent on the goodwill of the western maritime nations.

Having obtained by this treaty all the advantages which could be had without actually annexing the provinces of the empire, the foreign Powers believed that they had assured the future of

their trade with China and established a position in which any further extension of control which might become necessary could be effected without difficulty. They therefore treated the offers of the T'ai P'ing ruler with contempt They did not wish to trade freely in any part of the empire if they could monopolise the ports and collect the customs dues. They opposed by force the T'ai P'ing advance on the port of Shanghai, for, unless the Manchu authority was nominally maintained there, the customs revenue could not be applied to the payment of the indemnity. They sold arms, ships, and munitions to the Manchus, but refused like facilities to the T'ai P'ings Finally, from the port of Shanghai which they had preserved for the Manchus, they launched an army to harry the T'ai P'ing flank, and lent the Manchu government officers—General Gordon among them—to organise the imperial troops and command them in battle.

With this assistance the Manchus, after several years of devastating warfare, finally recaptured Nanking and destroyed the T'ai P'ing movement. With it perished for half a century all hope of reform or modernisation in China The Manchus, as corrupt and more degenerate than before, were re-established; and, although they owed their preservation to foreign intervention, remained as distrustful, hostile and reactionary in their outlook upon the western world as they had been in the 18th century The T'ai P'ing faith, Chinese Christianity, perished with its founder and prophet when Nanking fell. It left no trace, and has never been revived. When the Chinese, some fifty years later, borrowed revolutionary ideas from the west it was not the religious creed but the political faith of Europe which they sought. The influence of western ideas is strong in the republic, but the influence of Christianity is negligible. The missionaries, having rejected the millions of Hung Hsiu-ch'uan's followers, have had to be content with the few thousands of their own converts, and are unlikely to find a second opportunity. The Chinese masses, to-day, if they accept a western ideology, are more inclined to turn to the doctrines of Marx and Lenin than to those of Luther.

The failure of the T'ai P'ing movement was a turning point in the cultural history of China. The success of a great national and religious revolution would have replaced the effete Manchus by a

new dynasty, and a new cultural outlook, ready to accept the ideas of the west as a corollary of the new creed. It is very probable that the substitution of T'ai P'ing Christianity for Buddhism and Taoism would have given an impulsion to art and literature which the old faiths were no longer capable of performing. Under a political system to which they were accustomed, and to which they were alone suited, the Chinese would have been prepared, in the later 19th century, for the great changes which modern industry has forced upon the world As it was, they remained sunk under a decaying despotism, until, at its fall, they were involved simultaneously in a political, cultural and economic revolution complicated by foreign aggression. For this tragic outcome the cynical policy of western imperialism in 1860 was mainly responsible.

Chapter XXX

LATE ART

With one important exception later Chinese art is derivative and increasingly stereotyped. Technical skill remained at the same high level achieved in the T'ang and Sung periods, but inspiration and originality declined steadily. In bronze the best Ming workmanship is almost flawless, but it consists of the mechanical reproductions of ancient pieces decorated with the classical motifs, and there is a complete lack of invention. When ancient models were forsaken the productions of the late bronzesmiths are insipid and the decoration trivial. The jade and ivory carving of the Manchu period shows extreme manual skill and delicacy which maintained these ancient arts on a very high technical level down to modern times. Ivory has perhaps never been wrought into so many intricate forms as by the Cantonese craftsmen, who are able to carve out of one tusk as many as three spheres one within the other, all pierced with delicate filigree patterns.

The quality of this skill, particularly in the fine workmanship of gold and jewellery, has been strikingly revealed by the excavation in 1958 of the tomb of the Ming Emperor Wan Li, who reigned from A.D. 1573 to 1620. An immense treasure of jades, porcelain, silks and precious metals was found intact in his tomb ranged round the imperial coffin. No similar collection of Chinese goldsmiths' work and jewellery had been previously known, since tomb robbers hardly dared to sell such finds in their original form for fear of detection. Now pieces such as the gold filigree helmet worn by the Emperor, the jewelled head-dresses of his two empresses, and a wealth of golden ornaments, vessels and utensils reveal the supreme skill and taste of the late Ming artist in this field. Great quantities of the finest porcelain of the period, interred with the Emperor, serve to establish a perfect criterion for judging Ming Wares. The remains of magnificent silks, *k'o ssu*, and embroideries, partly preserved by folding, confirm the belief that Ming textiles were of unsurpassed quality. All these remarkable finds, filling a large hall, are now exhibited in the Palace Museum at Peking.

Yet in all these crafts, in spite of the fine workmanship of their products there is a certain self-consciousness, an absence of real purpose which reflects the character of the age in which they were made These things, upon which so much skill and patience were expended, were only intended to please. They had no ritual significance, no living inspiration derived from some ardent belief or high ideal. They were made for the wealthy as ornaments, to be admired for their technical perfection or ingenious workmanship, not to be venerated as symbols of a cult or as the expression of the artist's perception of truth. Ancient conventions lay heavily upon all the arts, as upon the mind of the educated class that patronised them.

This archaistic atmosphere was in itself a handicap to the creative spirit. Just as the Confucian was taught to look back to a remote classical age for his criteria of literary style, so the artist took his standards from the same distant past. The jade carver or bronzesmith was certain to please if he made an exact reproduction of an ancient piece, but if he struck out a new design his efforts would be ranked far below the copy of a classical model. This contempt for all that was not old created a sense of inferiority in the artist who tried new forms. It was accepted as a matter of course that any ancient work was necessarily superior to anything which could be produced in modern times, and the artists, succumbing to this psychological pressure, either copied the past or produced self-consciously trivial work which made no claim to challenge comparison with antiquity.

There was one art which escaped this paralysis, precisely because it had not existed in ancient times, and was therefore unfettered by an archaistic tradition. Porcelain, for which China is most famous, was really the last of the arts to flourish in the Far East, attaining its most perfect expression in the Manchu period, when all the others were in decline For this reason porcelain was for long the only Chinese achievement about which anything was known in the western world, where it had become so identified with its land of origin that "China" came to mean both the country and the ware. Nevertheless the early porcelain of the Sung period, which was the most valued by the Chinese themselves, was hardly known to western connoisseurs until the late

19th century, and not seen in European collections until after the fall of the Manchu dynasty.

The early fame of Chinese porcelains was, in fact, built upon wares which were admittedly inferior, the export porcelain of the late Ming and early Manchu reigns, made for the foreign market, which lacked the finish of the products of the imperial factory. As intercourse between China and the west grew closer opportunities for acquiring the finest Ming and Manchu porcelain became more frequent and magnificent collections were assembled in the chief cities of Europe and America The rich choice of examples to be seen in the west has formed a large and appreciative public who remain almost unaware of the character of the older arts of China; porcelain alone has become an integral part of the western cultural inheritance, and thus relatively early has been made the subject of a vast and detailed study.

The great collections in museums and private hands are as representative of all types of Chinese porcelain as anything still to be seen in China itself, and since the fall of the empire and the dispersion of part of the imperial treasures the rare wares of the Sung period, so highly prized in China, have enriched the collections of European connoisseurs. It would be redundant to attempt in a few pages to describe the porcelain to which experts have devoted so many beautifully illustrated volumes, but it may not be out of place to give a short account of the rise of the ceramic art and its relation to the cultural background of later Chinese history.

True porcelain was certainly made in the T'ang period; there are many specimens in collections which in paste and glaze are identical with fragments found at Samarra in Mesopotamia. The Chinese porcelain found at this site can only be T'ang, since the city was abandoned in the 9th century A.D. and never re-occupied.

In the Sung dynasty fine wares were produced for the first time, under the patronage of the Court, and in particular the artist Emperor Hui Tsung. At that time the industry was largely concentrated in the northern provinces, at sites in Honan and Hopei, which in later times have not produced porcelain of good quality. Ting Chou and Tz'ŭ Chou in Hopei, Ju Chou and Chün

Chou in Honan, were the first famous potteries As regards the porcelain made at Ju Chou, it is only within the last few years that authentic pieces have been known to Europeans. One of the finest specimens in the David collection is a shallow saucer, thinly potted, with three spur marks on the base

"The glaze is pale lavender netted over with a fine crackle stained reddish brown "*

One of the finest of the Sung monochrome wares was the porcelain made for the imperial Court, known as *kuan*, "official." The kilns were established by Hui Tsung at some time between the years A D 1107 and A D. 1117 in the precincts of the imperial palace at K'ai Fêng Fu This porcelain varied in colour, often of a pale bluish green, and it was undecorated The great value which the Chinese at a very early date attached to *kuan* ware was not solely due to its beauty and noble simplicity, but also on account of its rarity. In A D. 1125 K'ai Fêng Fu was captured by the Nu Chen invaders and the short lived *kuan* kilns were abandoned Although the Southern Sung set up a new factory in their capital at Hang Chou, which endeavoured to perpetuate the K'ai Fêng *kuan*, the clay was naturally drawn from a different source and consequently the ware was not of the same quality. Nevertheless, it is very probable that the great majority of the existing *kuan* ware does in fact belong to the southern pottery, as it had a much longer life Although the materials used at the two kilns cannot have been identical, the process and even the potters themselves were the same, for, like many of the skilled artisans of K'ai Fêng Fu and other northern cities, the imperial potters followed the Court to the south.

The rise of other potteries in the southern provinces is probably also due to the large scale migration of the art-loving inhabitants of the north In Chekiang the kilns at Lung Ch'uan near Ch'u Chou became a great centre of the industry In this district the *kô* ware, equally famous with the *kuan*, was made. This porcelain takes its name from the elder of two brothers Chang (*kô* = elder brother), who are reputed to have lived in the Southern Sung period, and who were masters of the ceramic art

*R. L Hobson, *A Catalogue of Chinese Pottery and Porcelain in the Collection of Sir Percival David*, 1934, p. 4.

in Lung Ch'uan. The elder of the two is credited with the invention of the crackle in the glaze, which distinguishes *kô* ware. The story of the Chang brothers, which is lacking in precision, may well be a legend, but there were certainly two kinds of porcelain made at Lung Ch'uan, of which the *kô* was the finest and has always been the most valuable

Lung Ch'uan also made a magnificent celadon ware, of which the coarser makes were largely exported. Specimens have been found in many parts of Asia, and Egypt, some even in Zanzibar. Some pieces later found their way to Europe, among them the Wareham bowl, which was bequeathed to New College by Archbishop Wareham in 1530* The Lung Ch'uan kilns continued into the early years of the Ming dynasty, when the pottery seems to have been abandoned, possibly owing to the competition of the great ceramic centre in Kiangsi, Ching Tê Chen

Ting Chou, in Hopei, was the home of the famous white Sung porcelain, and there is some literary evidence to suggest that this ware had been made at Ting Chou in the T'ang dynasty The pottery received imperial patronage under the Sung, which is the period to which the expression "Ting ware" is always taken to refer. This pure white porcelain of a slightly ivory tinge was sometimes left undecorated, but more commonly bore incised patterns, especially the finest pieces, while the inferior quality was moulded or stamped. The best period of the Ting Chou pottery was that of Hui Tsung, and the making of fine wares came to an end with the catastrophe which ended that Emperor's artistic, but politically disastrous, reign. The skilled potters of Ting Chou fled to the south, where they settled at Ching Tê Chên, and carried on the Ting Chou tradition in their new home. "Southern Ting," as this porcelain is called, was one of the regular wares of the Ching Tê Chên factories in subsequent periods, but it is not ranked on the same footing as the genuine Ting of the old city in the north. There the industry still survives, but its products are intended only for common use and are not classed among the fine porcelains.

Tz'ŭ Chou, a city now in Hopei, but formerly included in

*R. L. Hobson. *Chinese Pottery and Porcelain.* 1915.

Honan province, is as the name, "Pottery Town," implies, an ancient centre of the industry. It first received this name in the Sui dynasty, a fact which suggests that it may have been one of the first places where porcelain was made. In the Sung dynasty Tz'ŭ Chou porcelain had a great reputation, and the surviving pieces of that date are now valuable. Two kinds of ware were made, white, which is very similar to the Ting, and a painted porcelain decorated with floral designs in brown and black. The same ware, with very much the same decorative motifs, is still made at Tz'ŭ Chou, though after the Sung period the quality is inferior. Although no longer prized by collectors the wares of Tz'ŭ Chou are widely used to-day for ordinary purposes in North China, as they have been for over thirteen centuries.

Chün Chou, the modern Yu Chou in Honan, made a lavender or purple porcelain in the Sung period, which, though not patronised by the Court at that time, is now treasured as one of the most beautiful of the early wares of China. The surviving pieces are mostly flower pots and their saucers, which were also used as bowls for bulbs. No doubt the fact that pieces intended for this purpose were more strongly made has saved them from the fate which has befallen the more delicate products of the Chün kilns. Like the celadons, the Chün ware was undecorated, trusting to the glorious colour of the glaze for adornment. Although the Chun potteries seem to have suffered a complete eclipse after the nomad invasions, Chün ware was very successfully imitated at Ching Tê Chên in later centuries, and less successfully at Yü Chou itself when the industry was revived there in the 19th century.

The products of another Sung pottery, at Chien Ning Fu in Fukien, have been more appreciated in Japan than in China itself The porcelain called by the Chinese *chien* ware is the *temmoko* of the Japanese, and the speciality of this pottery was teacups of a rather rough appearance and a dark purple or blackish brown colour, which were used in tea tasting contests in the Sung period. The Japanese tea ceremony seems to have developed from this custom and the traditional *chien* ware cups were regarded as an essential feature of the ceremony. Genuine specimens of this Sung pottery command very high prices in

Japan, although the ware has been successfully copied by Japanese potters for many centuries.

The fall of the Southern Sung Empire and the short Mongol Yuan dynasty which succeeded it led to a temporary degeneration in the porcelain industry. The new masters of the empire were barbarians who had little appreciation for the fine arts and less sympathy with the cultivated taste of the Sung æsthetes They treated the potteries as a source of revenue, and for this reason encouraged the production of the coarser export wares which could be shipped over sea or transported by caravan to distant countries. Nevertheless, it would seem that important developments took place in the technical side of the art. Blue and white, which has generally been regarded as a Ming innovation, was made in the Yüan period—if not in the Sung—as an inscribed piece proves. The inscription has the valuable evidence of a date, corresponding to A D 1352

> "Chêng Wên-chin, the adherent to the teachings of the Sages, of the . . circuit of Hsin Chou, joyfully offers an incense burner and a pair of flower vases as a prayer gage that his house and family may be prosperous and his children (male and female) at peace Respectfully written on a lucky day in the fourth month of the eleventh year of Chih Chêng Offered up to the Generalissimo Hu Ching-i of the Ancestral Hall of the Starry Desire."*

The establishment of the Ming dynasty and the pacification of the empire in A D. 1360 speedily led to a great revival in the porcelain industry. No great development had been possible in an art so closely linked to industry when the empire was overrun by warring bands and the trade routes closed by predatory armies. Poetry, painting and calligraphy have sometimes flourished in disturbed times, since the individual artist could always find some quiet retreat, but porcelain needed peace and prosperity to develop. Raw materials had often to be brought from a distance, and the manufacture of fine wares was a costly

*R. L Hobson. "The Charles Russell Collection " *Chinese Ceramics in Private Collections* 1931. p 161

process, requiring the encouragement of an established government, and access to a wide market to enable it to flourish Consequently the best periods of porcelain were always the peaceful ages, and when the empire was disturbed the industry swiftly declined. The end of the Ming dynasty, and the last years of Manchu rule are both negligible as regards porcelain, and the troubles of the republic have so far prevented any revival in modern times

Under the Ming and Manchu Emperors the Court itself set the standard for the industry and directly controlled the most important pottery, which was at Ching Tê Chên in Kiangsi province. The northern kilns never recovered their importance after the fall of the Sung dynasty, and the potteries in Chekiang and Fukien which had been so famous in the Southern Sung sank to a second place. Ching Tê Chên became the sole centre of real importance, and it is there that all the imperial porcelain of the Ming and Manchu reigns was made. The imperial factory was under the direct supervision of an officer sent from the palace, at first one of the eunuchs in attendance on the Emperor, and in later years a sub-prefect of the regular civil service specially delegated for this purpose

We have seen that Ching Tê Chên had already become a place of importance in the porcelain industry before the Ming dynasty. The town received its name from the reign title "Ching Tê" of the Sung Emperor Chên Tsung in the years A D 1004 to 1007, and at the same time orders were given that in future all pieces made for imperial use must be marked with the title and date of the reigning Emperor. The Ming Emperors took the same interest in porcelain as their Sung predecessors, and even sent down the designs for the decoration of the imperial wares

This goes far to explain how the ceramic industry at Ching Tê Chên was a Court art, for the large palace orders and the constant demand for novelties, new designs, shapes, and glazes set a standard which commercial demand could never have sustained unaided by state support.

As opposed to the best Sung wares, mainly monochrome, the Ming period is distinguished by its use of colours and enamels, both put to pictorial use:

"The turquoise, green, violet blue, yellow and aubergine glazes of the *demi-grand feu* are used in the Ming 'three-colour' ware to fill in designs outlined in threads of clay, carved in open-work or incised with a point; and pictures were painted on the white glaze in a series of coloured enamels which are fired in the relatively low heat of the muffle kiln. These include red, green, turquoise, yellow, aubergine and brown, and they are sometimes supported by underglaze blue. Gilding was added either in leaf form or applied with a brush."*

Not that monochromes were neglected. Yung Lo eggshell porcelain has always been celebrated, as has the Hsüan Tê period, for a wonderful under glaze copper red At the same time there was an enormous development of blue and white wares, which were exported in great quantities

The reigns Hsuan Tê (1426-1435) and Ch'êng Hua (1465-1487) are two of the most famous periods in the ceramic industry, although comparatively little genuine porcelain of this period still survives It was extensively copied even in the later years of the Ming dynasty itself, and the tiresome custom of marking these copies with the reign title and date of the original period has rendered any identification by this simple means entirely untrustworthy. This too faithful reproduction of the originals was carried on in later times, so that the marks on porcelain are in themselves of little assistance when determining the question of date Most pieces marked with the early reign titles of the Ming dynasty were made in the K'ang Hsi reign of the Manchu dynasty, and by way of making the matter still more confusing most of the large quantities of porcelain marked with a K'ang Hsi date are in fact 19th century copies.

Ming writers on porcelain say that the blue and white of Hsüan Tê was superior to that of Ch'êng Hua, but the polychrome porcelain of the latter reign surpassed that of the Hsuan Tê period. One reason for this is said to be the fact that the supply of clay used in Hsuan Tê ware was running low by the middle of the century and gave out entirely in the Chia Ching period,

*R. L Hobson, *A Catalogue of Chinese Pottery and Porcelain in the Collection of Sir Percival David*, 1934, p. xxxiv

(1522-1566). A satisfactory substitute was found in later times, but until this had been discovered it was not possible to get the excellent effects of Hsüan Tê blue and white One of the chief ingredients, which was brought from Central Asia, was the cobalt ore called by the Chinese Muhammadan Blue, since it was imported from Moslem countries. Supplies from this source were intermittent and liable to be interrupted by wars, and the Chinese sources produced only an inferior quality which did not give the same results.

In the middle of the Ming period the contact with European nations along the coast opened up a new export market for porcelain which in later times attained enormous proportions. The Portuguese were of course the first to bring porcelain to Europe, where it was regarded as a great rarity. The owners of these early pieces mounted them on elaborate gold and silver stands, and their value in the 16th century was very high. Some of the earliest Ming porcelain to reach England was a gift made by the King of Castile to Sir Thomas Trenchard in 1506, consisting of blue and white bowls which bear the mark of Hung Chih (1488-1505), and were at that time, therefore, modern work

While a few bowls were in Europe regarded as a suitable royal gift, in China the imperial annual demand ran into thousands of pieces The list of porcelain supplied to the palace in 1546 has been preserved. There were

300 fish bowls
1,000 covered jars
22,000 bowls
31,000 round dishes
18,400 cups.

Obviously the Court cannot have found a use for this quantity of porcelain, and much of it must have been presented to officials, temples, and courtiers. When it is remembered that this list only includes the ware made at the imperial factory for the palace, and not the productions of the private factories, it is obvious that the industry at Ching Tê Chên had greatly increased in importance

In the later Ming dynasty the Wan Li period (1573-1619)

is a celebrated era in the history of porcelain The long reign of this Emperor was indeed a time of increasing weakness and trouble for the empire as a whole, but neither Japanese raids on the coast nor rebellions in the western provinces seem to have affected the development of the ceramic art at Ching Tê Chên. The Ming Court attached so much importance to porcelain that whatever might happen elsewhere the imperial potteries were well protected. At this time a sub-prefect was permanently stationed at Ching Tê Chên to take charge of the factory, and the large demand from the palace was not reduced on account of the disturbances.

The work of the factory was minutely sub-divided between many hands, even the decoration itself was never the work of one artist. One worker specialised in some small part of the design, and passed the piece on to others, each adding a few details, until the calligraphists wrote the mark and date upon the completed vessel. It is a curious fact that these beautiful porcelains, the glory of the late art of China, were the products of a truly communal system, and not the work of any one inspired artist. The same system was continued under the Manchu dynasty, although at that time the director of the factory took an active part in the invention of new glazes and the improvement of technique.

Although Ching Tê Chên was the dominant centre of the ceramic industry under the last two dynasties, there were other potteries which made fine wares. Tê Hua in Fukien province made (and still makes) the ware known in Europe as *blanc de chine* specialising in statuettes and figurines, a favourite subject being Kuan Yin, the Bodhisattva often called the Buddhist Goddess of Mercy. In the Ming period Tê Hua potters occasionally made curious figures of Europeans, Dutch sailors or Portuguese merchants. They are represented in the characteristic pose of the Buddhist divinities, though one may suspect that this was a consequence of the potters' conservative habits of work rather than any belief in the divine character of the western visitors.

Yi Hsing near Ch'ang Chou in Kiangsu specialised in the red stoneware teapots which are still used in all parts of China. This factory was also at work in the Ming period, though it is not known exactly when it was started. As it was even then renowned

for its teapots the European nations when they took up tea drinking copied the Yi Hsing ware Late 17th century western porcelain is strongly influenced by Yi Hsing style, which in Europe became wrongly known as *buccaro*, a term properly belonging to a pottery made by the Indians of South America.

The troubles of the last Ming reigns and the uncertain position of the Manchu dynasty in its first years were reflected in the fortunes of Ching Tê Chên and its products. Between 1674 and 1678 the imperial factory was destroyed in the war against Wu San-kuei, although it was rebuilt two years later, when K'ang Hsi had pacified the empire. Authentic porcelains of the last Ming and first Manchu Emperor are therefore hardly to be found. Better days were soon to come, for the long reign of K'ang Hsi, 1662-1722, is the golden age of porcelain in China. The new Emperor took a keen personal interest in ceramics, as in all the civilisation of China, inspired by a desire to prove to his still restless Chinese subjects that the Manchu conquest did not mean a return to barbarism The unfortunate effects of this excessive reverence for the past on other art and on literature have been noticed in another chapter, porcelain, which was still young, at first escaped the ill-effects of the conservatism of the Manchu Court.

In 1682 the Emperor appointed a resident director named Ts'ang Ying-hsuan, a man of refined taste and inventive genius who applied his skill to the improvement of technique and the discovery of new glazes The polychrome ware in which green predominates, called *famille verte* in Europe, now began to rival the blue and white which had been one of the glories of the Ming reigns The old types, however, were successfully continued, indeed, in technical skill, purity of form and tasteful decoration the K'ang Hsi wares were the equal of anything made in earlier times It was only at the very end of the reign that the first signs of over-refinement and elaboration begin to appear.

In the K'ang Hsi period the European market for Chinese porcelain rapidly expanded, and to meet this demand the potters began to make ware in shapes suited to western requirements. Decoration was also modified to please the European taste. Designs, originally Chinese, which had been imitated by the

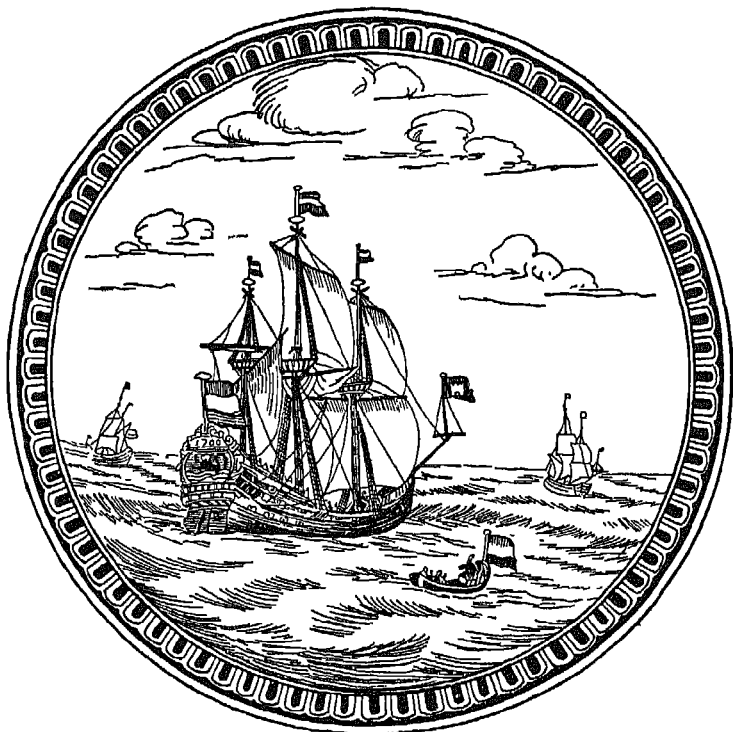



FIG 65. *Porcelain plate decorated with a picture of a European ship, dated 1700*

Dutch in Delft, were now re-adopted by the Chinese on export porcelain. This cross exchange of patterns and motifs between China and Europe is a feature of the Manchu trade which greatly complicates the study of Chinese influence on early western porcelain. During the 18th century some Chinese porcelain was sent to Europe in the rough to be decorated there, some was decorated in China to specified European designs, such as the armorial china of noble families, and a third category was decorated by the Chinese with patterns copied from European pieces. In the last class there were vessels decorated with copies of the Meissen flower patterns. As extreme examples of European influence we may cite the Indiaman, and the pastoral scene reproduced in Figs. 65 and 66.

FIG 66 *Porcelain plate decorated with a European pastoral scene*

For the Chinese market, and for the palace, the traditional native motifs were still preferred Legends drawn from Buddhism and Taoism, historical events, and copies of famous pictures, were added to the patterns which the Ming had used, though all the old styles were perpetuated, and the old wares copied. A new monochrome, the beautiful powder-blue, was an invention of this reign and is ascribed to the fertile genius of the director, Ts'ang Ying-hsuan. One curious class of porcelain, which is to be attributed to the late Ming or very early K'ang Hsi period, is the so-called Jesuit china, vessels decorated with Christian motifs and made for the Catholic converts, who, as has been mentioned in Chapter XXIV, were numerous and influential at the end of the Ming dynasty. Some of these pieces have motifs taken from

Buddhism and Taoism as well as Christian scenes and symbols, either because the designers did not realise the incompatibility, or because, with Chinese tolerance, they ignored it.

The short reign of Yung Chêng (1723-1735) is the period in which the *famille rose*, in which a pale shade of rose pink is the dominant colour, begins to be preferred to the *famille verte*, which henceforward declines in importance. The new Emperor, like his father, was a keen amateur of porcelain, and in 1728 appointed an able and inventive director named T'ang Ying. T'ang Ying made a profound study of the technical side of ceramics and was able to find the secret of many new glazes, some of which had accidentally occurred on earlier pieces without the potters understanding how to produce them at will. Under T'ang Ying the imperial factory paid more attention to monochromes than had been the case since Sung times, and the fine new colours discovered by the director were much employed. The *famille rose* colours are known to the Chinese as *yang ts'ai*, or "foreign colours," and it is accepted that their use imitated foreign sources.

One of the specialities of the imperial factory under T'ang Ying, both in this reign and in that of Ch'ien Lung which followed, was the copying of ancient bronze vessels in porcelain. The antiquarian taste of the Court was responsible for this development, which in spite of the perfection of the workmanship and skill of the reproduction is something of a perversion of ceramic art, for the forms and decoration proper to bronze are not those most suited to porcelain. Under the long reign of Ch'ien Lung (1736-1795) the growing taste for such imitations was satisfied with masterly skill. There were porcelains perfectly imitating jades, ivories, glass and even wooden objects as well as bronze, but they are more apt to astonish by the perfection of the illusion than to provoke respect as works of art in themselves. The taste for the curious rather than for the beautiful is a sure sign of approaching decay. The brilliant colours and fine technique of Ch'ien Lung porcelain are qualities which compel admiration, but especially in the later years, when the influence of T'ang Ying was no longer present, the art, in common with all Chinese art of the late 18th century, lost strength and became increasingly self-conscious.

The verdict of an English scholar and connoisseur, R. L. Hobson,* has expressed the change in a lucid exposition:

> "In the Ch'ien Lung period Chinese porcelain reaches the high-water mark of technical perfection. The mastery of the material is complete. But for all that the art is already in its decline. By the middle of the reign it is already overripe, and towards the end it shows sure signs of decay. At its best the decoration is more ingenious than original, and more pretty than artistic. At its worst it is cloying and tiresome. The ware itself is perfectly refined and pure, but colder than the K'ang Hsi porcelain The *famille rose* painting is unequalled at its best for daintiness and finish, but the broken tints and miniature touches cannot compare in decorative value with the stronger and broader effects of the Ming and K'ang Hsi brushwork. The potting is almost perfect, but the forms are wanting in spontaneity; and the endless imitation of bronze shapes becomes wearisome, partly because the intricate forms of cast metal are not naturally suited to the ceramic material, and partly because the elaborate finish of the Ch'ien Lung wares makes the imitation of the antique unconvincing. In detail the wares are marvels of neatness and finish, but the general impression is of an artificial elegance from which the eye gladly turns to the vigorous beauty of the earlier and less sophisticated types."

These last words might well stand as the criticism for all the art of the Manchu period In painting, also, there was artificial elegance, conscious archaism, and great technical skill with the brush. It is no longer the great art of the Sung masters, nor even of their imitators in the Yüan and early Ming dynasties, but it has its charm, and a certain æsthetic value These qualities show to advantage in the decorative arts of lacquer work, of which the screen illustrated in Plate XIX, is a magnificent example. The composition is here perfectly adapted to the purpose of a screen, for each two panels contain in themselves a complete picture no matter which way the screen is folded.

In the first years of the Manchu dynasty, the reigns of Shun

**Chinese Pottery and Porcelain*. R. L. Hobson. 1915. p. 247, vol. II.

Chih and K'ang Hsi, there was a celebrated school of painting in the south-eastern provinces, the region where the Southern Sung dynasty had reigned, and which had ever since been recognised as a centre of culture and art Soochow and Hang Chou the two chief cities of the Yangtze delta* were famous not only for the beauty of the scenery, but also for the learning and civilisation of the inhabitants. Not for nothing the proverb runs:

> "*Shang yu hsi T'ien*
> *Hsia yu Su Hang.*"

"Heaven above, Soochow and Hang Chou on earth."

The most famous artists of the early Manchu period all came from the district of Soochow, and by an odd coincidence, all had the surname Wang For this reason they are usually known as the "four Wangs." All four were born under the Ming dynasty, and the major part of the lives of the elder two were passed before the Manchu conquest. If these painters are classed as artists of the Manchu dynasty, it is in accordance with the custom which includes in the famous men of a dynasty all those who died under its sway, whether they were born long before it came to power or not. In reality all the four Wangs, who were landscape painters following the Sung style, had inherited and transmitted a cultural tradition which had never wholly disappeared in the civilised cities of the south-east. They belonged spiritually to the earlier dynasty, and were in no way indebted to the inspiration of the new régime.

It is therefore significant that these four artists, and their contemporary Yün Shou-p'ing (1633-1690), should be considered the greatest painters of the Manchu dynasty. It is an admission of the fact that art only flourished in the K'ang Hsi period, when the Ming traditions were still alive, and declined as the ultra conservative Manchu system became established. The "four Wangs" were, Wang Shih-min (1592-1680), Wang Chien (1598-1677), who was a grandson of Wang

*Before foreign trade brought about the rise of Shanghai, which is now not only far larger than the older cities of the province, but has become the largest city in the Far East.

Shih-chêng, Ming statesman and reputed author of the celebrated novel, the *Chin P'ing Mei* (see Chapter XXV)—Wang Hui (1632-1720) was a pupil of the second Wang, and was commissioned by K'ang Hsi to make the illustrations for the published description of the Emperor's southern tour, an event which marked the complete pacification of the provinces beyond the Yangtze Wang Yüan-ch'i, the last of the four (1642-1715) was both an artist and a writer on art He was one of the scholars ordered to prepare a history of painting for the Emperor K'ang Hsi.

All four were chiefly landscape painters, and much of their work was devoted to copying the famous Sung and Yüan pictures. They also painted original landscapes, in which they tried to perpetuate the Sung style. Yun Shou-p'ing, also a Soochow artist, was the son of a devoted Ming patriot who had followed the waning fortunes of his masters to Canton, and there became a Buddhist monk rather than submit to the Manchus and wear the queue, the style of coiffure used by the conquerors and imposed by them on their conquered Chinese subjects The son of this hater of the Manchus became the recognised master of still life flower and bird studies under the new dynasty, and no subsequent artist of the Manchu period was considered his equal. The picture of pheasants and peonies (Plate XX) bears an early K'ang Hsi date, though the style of this picture is distinctly Ming. It is more mannered than the older school of painting, and the elaborate composition, tasteful as it is, has not the restrained simplicity of a Sung picture A comparison between this fine example of the later painting and Hui Tsung's study of the pigeon (Plate XIV) eloquently reveals the changed quality of late art.

In the 18th century, distinguished for its taste for curosities, there was a style of painting which is attributed to a T'ang painter, but which does not seem to have met with serious consideration until the time of Ch'ien Lung Discarding the brush, the artist used the long thumb nail as his instrument, and achieved broad impressionist effects quite unlike the delicate lines of brush painting It may be that if artists had studied the possibilities of these new effects rather than the dexterity of thumb nail technique, Chinese art might have been revitalised by a new style. The

atmosphere of that time, however, was too opposed to innovation for any such development to be possible. The thumb nail or finger painting, as it is sometimes called, remained a curiosity, and even in this limited range the acknowledged master was an artist named Kao Chi-p'ei who died as early as 1734

The history of Chinese art after Ch'ien Lung is a record of decline The porcelain of the early 19th century emperors, Chia Ching and Tao Kuang, is purely imitative. In the fifties the T'ai P'ing army destroyed Ching Tê Chên, and, although the industry was revived after the suppression of the rebellion, and recovered much of the technical skill of past days, its productions do not command respect as works of art. No movement of importance took place in painting during this century of weakness and decline. Art, like literature and the social system of the empire itself, was in need of a great revolutionary stimulus to shake off the burden of too powerful and conventionalised tradition. This stimulus, so far as politics and literature are concerned, was provided by the revolution of recent years, but art as yet has only made a tentative adjustment to the new influence

This fallow period is to be expected under the first shock of a vast upheaval. The interests of a revolutionary age are concentrated upon practical issues, and the changes which are taking place. Literature, the medium of thought, is naturally quick to feel the mood of the time, and it is not surprising that in China to-day it is in this field that the renaissance movement has achieved its most striking effects Art needs more time; when the character of the new age is definitely established and foreign influences have been harmonised with the national culture, art will revive, and the happy eclecticism of a new T'ang age may be once again the reward of contact with the west.

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